Draft Mitigated Negative Declaration/Finding of No Significant Impact
(Joint CEQA Initial Study and NEPA Environmental Assessment)

Drumheller Slough and White Mallard Outfall Project

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Chapter 1. Purpose of and Need for Action

PURPOSE AND SCOPE OF THIS EA/IS

This Environmental Assessment/Initial Study (EA/IS) has been prepared to assess the impacts of the construction and operation of the proposed Drumheller Slough and White Mallard outfalls, as required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The project involves the rehabilitation and replacement of existing structures as part of a larger fish passage program. Work on the Drumheller Slough and White Mallard outfalls will be funded by portions of the Central Valley Project Improvement Act's (CVPIA) Restoration Fund administered by the U.S. Fish and Wildlife Service (USFWS). The U.S. Bureau of Reclamation (USBR), which is administering funds for the CalFed portion of the overall program, will act as the lead federal agency under NEPA. Reclamation District No. 1004 (RD 1004) will act as the state lead agency under CEQA. Although this document was prepared to comply with both NEPA and CEQA, the NEPA term "proposed action" is used throughout the text.

This EA/IS is a public document that analyzes the environmental effects of the proposed action, presents feasible measures to reduce or avoid potential environmental damage, and identifies alternatives to the project. It complies with environmental requirements established by both NEPA and CEQA. This EA/IS serves as an informational document to be used in the decision-making process and does not recommend either approval or denial of the project.

PURPOSE AND NEED FOR THE ACTION

The Drumheller Slough outfall structure functions as a barrier to prevent anadromous fish species migrating to spawning areas in Upper Butte Creek from straying into Drumheller Slough and becoming stranded. The structure is located at the mouth of Drumheller Slough on the north side of Butte Creek. It is an overflow flashboard structure that when boarded up, creates a differential, thereby acting as a barrier to prevent fish from straying into Drumheller Slough.

The White Mallard outfall is an outlet for drainage from the White Mallard Duck Club. The outfall discharges into Drumheller Slough upstream of the Drumheller Slough outfall structure. The normal discharge point from the White Mallard Duck Club is a weir outlet directly into Butte Creek. The outfall is used as an alternative discharge point when upstream migrations of fish are occurring in Butte Creek, in place of the White Mallard weir, which may attract fish from Butte Creek. Since the facility discharges into Drumheller Slough, instead of Butte Creek, the potential for fish straying from Butte Creek into the White Mallard Duck Club is removed.

The existing Drumheller Slough outfall structure has repeatedly been washed out during high flows and is, therefore, not suitable for its intended function. The facility must be replaced with a stable structure that will provide a permanent barrier to prevent fish straying into Drumheller Slough.

The White Mallard outfall must be rehabilitated to replace the weir outlet to Butte Creek during critical periods. The facility outlet is severely eroded and with continued use will eventually wash out. With minor modifications, the facility outlet can be stabilized to provide a permanent alternative discharge point into Drumheller Slough.

SCOPE OF THIS DOCUMENT

This EA/IS describes the affected environment, identifies and discloses potential environmental effects, and presents mitigation measures to be implemented as part of the proposed action. The attached Initial Study Checklist (Appendix A) summarizes the level of significance of the potential impacts associated with the proposed action. Table 1 identifies the resources considered present in the project area and indicates whether they would be substantially affected by the proposed action.

Chapter 3, Environmental Setting , focuses on those resources that would be affected by implementation of the proposed action or its alternatives. Where it can be shown that the proposed action would not or could not affect a particular resource, a concluding statement to that effect is provided; no additional discussion will be provided on such resources in Chapter 4, Environmental Consequences .

Table 1. Potential for Effects on Environmental Resources

Critical Element	Present	Affected	
		Yes	No
Land Use and Planning	yes		✓
Agricultural Resources	yes		✓
Population and Housing	no		✓
Geology and Soils	yes	✓	
Hydrology and Water Quality	yes	✓	
Air Quality	yes		✓
Transportation/Traffic	yes		✓
Biological Resources	yes	✓	
Mineral Resources	no		✓
Hazardous Materials	yes		✓
Noise	yes		✓
Public Services	no		✓
Cultural Resources	no		✓
Visual Quality	no		✓

REQUIRED PERMITS, APPROVALS, AND DECISIONS TO BE MADE FOR THE PROPOSED ACTION

As lead agency for the NEPA process, the USBR is responsible for documenting compliance with related federal and state environmental laws and regulations and permit requirements needed to support its decision to approve the replacement and rehabilitation of the existing outfall structures. Table 2 provides a comprehensive listing of the agencies and their respective permit or authorizing responsibilities. This EA/IS documents the coordination between the USBR and the federal cooperating agencies and other federal, state, and local agencies and private entities required to comply with these other applicable laws and regulations.

Table 2. Required Permits, Approvals, and Compliance for the Proposed Action

Agency	Requirement
Federal	
U.S. Army Corps of Engineers	Section 404 Clean Water Act, Nationwide Permit #3
U.S. Bureau of Reclamation	Lead agency under NEPA
U.S. Fish and Wildlife Service	Endangered Species Act Section 7 consultation; cooperating agency under NEPA
National Marine Fisheries Service	Endangered Species Act Section 7 consultation; cooperating agency under NEPA
State	
California Department of Fish and Game	Streambed Alteration Agreement (Section 1603); California Endangered Species Act compliance; responsible agency under CEQA
Central Valley Regional Water Quality Control Board	Section 401 Clean Water Act water quality certification
California State Historical Preservation Office	Section 106, National Historic Preservation Act consultation
Reclamation District No. 1004	Lead agency under CEQA; participates in the operation and maintenance of the structures
Other	
White Mallard Duck Club	Participates in the operation and maintenance of the structures

Chapter 2. Description of the Proposed Action and Alternatives

PROJECT LOCATION AND SETTING

Both the Drumheller Slough and White Mallard outfalls are located in Colusa County, just north of the confluence of Drumheller Slough and Butte Creek (Figure 1). The project area lies approximately 6 miles east of the Sacramento River.

The Drumheller Slough outfall is located at the mouth of Drumheller Slough on the north side of Butte Creek. Drumheller Slough is an outlet to Butte Creek for drainage from the RD 1004 service area. The White Mallard outfall is located at the south end of the White Mallard Duck Club, west of Butte Creek, and east of Drumheller Slough. The White Mallard outfall discharges into Drumheller Slough approximately 1,000 feet upstream of the Drumheller Slough outfall.

Both facilities can be located on the U.S. Geological Survey Sanborn Slough 7.5-minute topographic quadrangle (Township 17 North, Range 1 West, unsurveyed section). Figure 2 shows the precise locations of the Drumheller Slough and White Mallard outfalls.

The project area is rural and surrounded by agricultural lands, managed wetlands, and undeveloped land. The area to the west and south consists of actively farmed ricelands that are flooded to provide winter waterfowl habitat. The White Mallard Duck Club, located north of the project area, is a managed wetland that is flooded during the winter to provide waterfowl habitat. The area to the east and north on the other side of Butte Creek is an undeveloped area of the Butte Sink. The area further north, which is dependent upon Drumheller Slough for drainage, consists primarily of agricultural land used for rice farming. The majority of this land is also flooded in the winter to provide waterfowl habitat.

The Drumheller Slough outfall structure was operated by RD 1004 to provide a barrier to prevent migrating adult fish from straying into Drumheller Slough. The existing structure consists of a dam across the mouth of Drumheller Slough just upstream of the confluence with Butte Creek. The structure was initially constructed as an earthen berm with sacked concrete headwalls on the upstream and downstream faces. A 72-inch corrugated metal pipe with a stoplog riser on the upstream end was used to pass flow and create the differential required to act as a fish barrier. High flows in the winter of 1997-98 washed out the western half of the facility.

The White Mallard outfall structure is operated by the White Mallard Duck Club (Club) as a drainage outlet at the Drumheller Slough end of the Club. The facility consists of a gated, 42-inch concrete pipe culvert outlet. The culvert discharges into a ditch which empties into Drumheller Slough; the facility is operated to maintain water levels in the Club's wetland areas.

PROPOSED ACTION

Project Characteristics

Drumheller Slough Outfall

The existing facilities have failed repeatedly. The Drumheller Slough outfall has been washed out several times during high flows and is, therefore, not suitable for its intended function. The facility must be replaced with a stable structure that will provide a permanent barrier to prevent fish straying into Butte Creek.

The proposed action involves replacing the existing facility with a more stable concrete overflow structure. The proposed facility is shown on the preliminary design drawing (see Figure 3). The new structure will have openings configured to the channel shape and a low overflow weir to minimize obstructions to winter drainage flows. To allow for closure of the openings to create the required barrier, the openings will be fitted with stoplog slots. Stoplogs or bulkheads will be manually installed and removed as required.

The channel in the area of the facility will be protected from erosion using riprap revetment. Riprap will extend approximately 10 feet upstream and 20 feet downstream of the structure.

White Mallard Outfall

The White Mallard outfall must be rehabilitated to replace the use of the weir outlet to Butte Creek during critical periods. The facility outlet is severely eroded and with continued use will eventually wash out. With minor modifications, the facility outlet can be stabilized to provide a permanent alternative discharge point into Drumheller Slough.

The proposed action involves rehabilitation of the facility outlet as shown on the preliminary design drawing (see Figure 4). The proposed work includes:

- Replacement of washed out concrete pipe sections
- Installation of energy dissipator at outlet end of pipe
- Replacement of eroded embankment section at outlet
- Placement of riprap revetment around outlet

Figure 3. Drumheller Slough Outfall Works

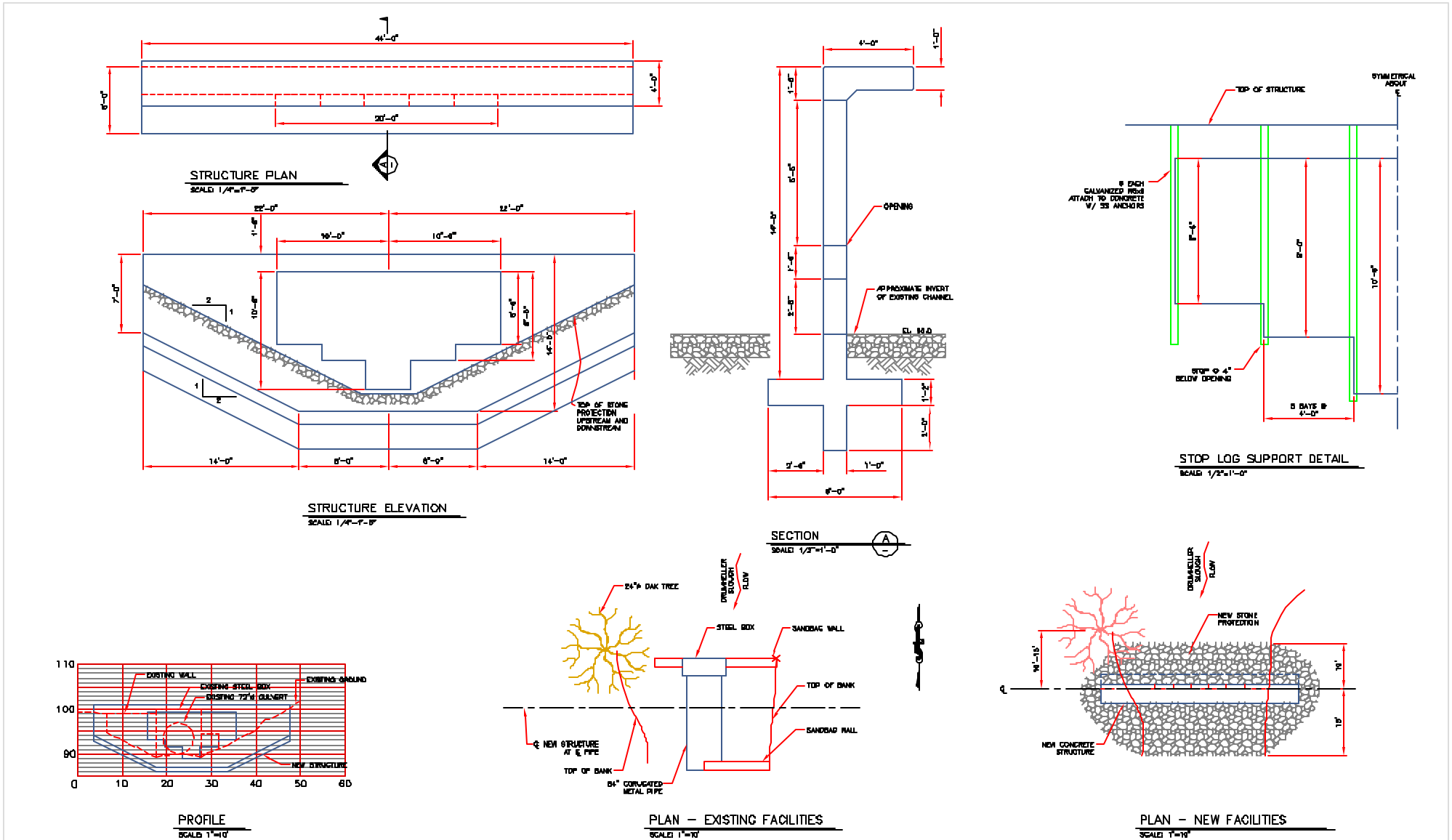
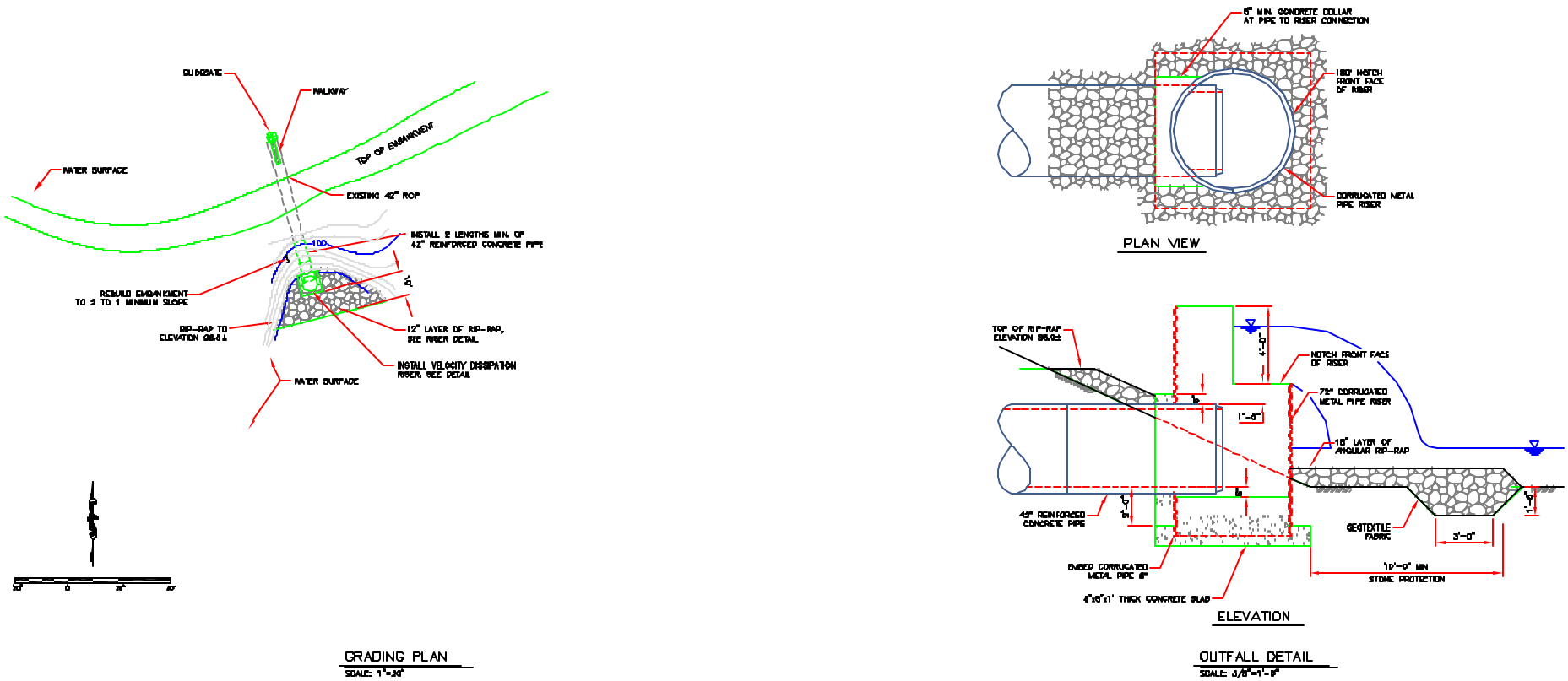


Figure 4. White Mallard Outfall



GRADING PLAN
SCALE: 1"=30'

OUTFALL DETAIL
SCALE: 3/8"=1'-0"

NOTES:

1. DATUM IS LOCAL WITH ASSUMED NORTH AND TBM ELEVATION = 100.0. TBM IS LOCATED ON EAST END OF CULVERT HEADWALL.
2. PLACE FILL MATERIAL IN LIFTS OF NO MORE THAN 8" LOOSE DEPTH AND COMPACT TO 90% RELATIVE DENSITY.
3. PLACE ROCK TO MINIMIZE VOIDS WITH LARGER ROCK PLACED AROUND EDGES AND IN FRONT OF RISER.

MATERIAL SPECIFICATIONS:

1. CONCRETE IS BACK, LEAN CONCRETE MIX.
2. REINFORCED CONCRETE PIPE: CLASS III, ROCKERHEAD.
3. CORRUGATED METAL PIPE: 14 GAGE, PLAIN GALVANIZED WITH 3"x 1" OR 2.5"x1" CORRUGATIONS.
4. RIP-RAP: ANGULAR ROCK WITH THE FOLLOWING GRADATION:

ROCK SIZE	% LARGER THAN
200 LB	50-100
75 LB	90-100

5. GEOTEXTILE FABRIC: HEAVY WEIGHT NON WOVEN FABRIC, BIDTEX 1151 OR EQUAL.

REV.	DATE	BY	CHK	APPR	DESCRIPTION
-	9/9/98	RYB	BPS	PHE	100% SUBMITTAL

DESIGNED BY: RYB
DRAWN BY: SC
CHECKED BY: SMS
IN CHARGE: PHE
DATE: 12-13-98

ENSIGN & BUCKLEY
CONSULTING ENGINEERS
SACRAMENTO

SUBMITTED

APPROVED

RECLAMATION DISTRICT NO. 1004
WHITE MALLARD OUTFALL
GRADING PLAN AND DETAILS

SCALE OF ORIGINAL

DRAWING NO. WM-1
SHEET 1

Construction Schedule and Characteristics

Schedule

Construction of the proposed action would be performed from July 1 through October 15, 2000. Work in the White Mallard Duck Club must be completed prior to October 1 when the club is flooded and access is cut off to the construction site. In-channel work on the Drumheller Slough outfall is scheduled to be completed no later than October 15, 2000.

Dewatering

Both areas will require dewatering prior to the onset of construction. The flow down Drumheller Slough can be cut off upstream to allow for installation of dewatering facilities. Depending upon levels in Butte Creek, backwater may encroach upon the Drumheller Slough outfall site. Silt fencing or similar filter material will be installed across the channel between the work area and Butte Creek to isolate any potential sediment from the Creek.

Earthen cofferdams will be installed across the channel upstream or downstream of the work area and protected from erosion using geotextile. A temporary pipe will be installed through the construction site to bypass flows. After cofferdams and bypass pipes are installed, flow through Drumheller Slough will be re-established. Pumped water from the work area will be discharged onto adjacent fields. When the facility is completed, cofferdams will be removed and the channel will be restored. Prior to cofferdam removal, the flow in Drumheller Slough will be cut off.

The White Mallard outfall work is located outside the channel and will be performed in the dry. A silt fence or hay bales will be placed between the work area and Drumheller Slough to capture sediment in any potential runoff from the site.

Access and Staging

Access to the Drumheller Slough outfall site will be from the north via Putnam Road, an existing County Road that runs parallel to and along the west side of Drumheller Slough. The site can be accessed directly from Putnam Road. The staging area will be located in the disturbed upland area, owned by Jack W. Baber, Jr., between Putnam Road and Drumheller Slough. This upland area is currently used as a staging area for farming operations on the west side of Putnam Road.

Access to the White Mallard outfall will be via the access road on top of the RD 1004 levee and the existing White Mallard Duck Club access road, as shown in Figure 4. Staging will be in a disturbed upland area adjacent to and south of the outfall that is currently used as a staging area and borrow source for the White Mallard Duck Club.

Equipment and Materials

Heavy equipment to be used during construction will include:

- Backhoe
- Bucket Loader
- Self-Propelled Compactor

The approximately 150 cubic yards (cy) of soil required for reconstruction of the White Mallard embankment will be excavated from the adjacent field, which is presently used as a borrow source for the White Mallard Duck Club.

Concrete for the facility construction will likely be delivered from Colusa, in about five total truck round trips. The White Mallard facility will use about 5 cy resulting in one round trip, and the Drumheller Slough facility will use about 40 cy resulting in about four round trips. Rock erosion protection will require importing material, probably from the town of Sutter. Approximately 300 tons of rock will be imported, requiring about 25 truck round trips. It is expected that five truck round trips will be required for miscellaneous material deliveries.

Personnel

A base project crew of two persons will be required throughout most of the construction period. Crew size will peak at about four persons.

ALTERNATIVE TO THE PROPOSED ACTION

NEPA requires that feasible alternatives be identified that might mitigate adverse environmental impacts. These alternatives should meet the basic need. The following discussion describes the No-Action Alternative and summarizes a second alternative that was considered but rejected; the reasons why these alternatives were rejected are provided.

No-Action Alternative

In addition to the impacts of the proposed action, the lead agency must consider the environmental impacts of the No-Action Alternative. The No-Action Alternative was developed to meet the requirements of NEPA and to serve as a baseline for assessing the impacts of the proposed action.

Drumheller Slough Outfall

Under the No-Action Alternative, the damaged structure would not be repaired or replaced. The failed facility would not provide a barrier to prevent migrating adult fish from straying into Drumheller Slough and becoming stranded. This alternative would not satisfy the need to protect, enhance, and restore critical habitat and natural resource communities of native, resident, and migratory wildlife species.

White Mallard Outfall

Under the No-Action Alternative, the White Mallard outfall would continue to erode and would eventually wash out. The weir outlet into Butte Creek would continue to be used as a discharge point into Butte Creek. As a result there would be a potential for fish to stray from Butte Creek into the White Mallard Duck Club and become stranded. This alternative would not satisfy the need to protect, enhance, and restore critical habitat and natural resource communities of native, resident, and migratory wildlife species.

Alternatives Considered but Rejected

Rehabilitation and Repair of Existing Facilities

Under this alternative, each facility would be rehabilitated and/or repaired following a failure. This alternative was rejected because it would not mitigate any of the potential adverse environmental impacts. The Drumheller Slough outfall structure has repeatedly failed during high flows and the White Mallard outfall structure is near failure. The existing facility designs, therefore, are not suitable for their intended function. If the facilities are allowed to continue to fail, fish are likely to stray from Butte Creek into Drumheller Slough and the White Mallard Duck Club and become stranded. Repair of the existing facilities without any improvements would result in nearly the same impacts as the proposed project each time the facilities are repaired.

PROJECT COMMITMENTS

The following actions (organized by resource topic) will be implemented as part of the proposed action to avoid the potential for adverse environmental impacts that could occur with project construction and/or operations.

Traffic and Circulation

- Signs will be posted in appropriate locations on Putnam and Gridley roads warning motorists that trucks and heavy equipment will be traveling along these roads.

Air Quality

- The contractor will cover all trucks hauling rock, concrete, and any other loose materials or ensure that these trucks have at least 2 feet of freeboard.

- The contractor will replant disturbed areas with native, non-invasive vegetation as quickly as possible following construction.

Drainage and Water Quality

- RD 1004 will apply for certification/waiver from the Central Valley Regional Water Quality Control Board (RWQCB) under Section 401 of the Clean Water Act. The RWQCB does not require a stormwater discharge permit for construction activities that result in soil disturbances less than 5 acres in size (per Section 402 of the Clean Water Act National Pollutant Discharge Elimination System compliance).

- The contractor will install sandbags, hay bales, silt fencing, or other erosion control and containment measures during construction to prevent silt runoff into Drumheller Slough and Butte Creek.

- Hazardous materials which would be present during project construction would be limited to petroleum products and concrete curing compounds. Proper handling of these materials will avoid danger to humans, wildlife, and sensitive environmental resources.

- Vehicles will be removed from the normal high-water area of Drumheller Slough prior to refueling and lubricating. Equipment will be cleaned prior to use and properly maintained to prevent any leakage of fuel or lubricants.

Biological Resources

- The project engineer will stake the limits of the construction footprint in the field. Temporary construction netting (high-visibility plastic fencing) will be placed around nearby riparian vegetation by the contractor to provide protection from construction activities. The removal of riparian vegetation will be limited to fast-growing shrubs, vines, and herbaceous vegetation. Work in the vicinity of a 24-inch dbh oak tree will

employ an arborist-recommended approach for trimming roots and monitoring the tree for stress.

- Project personnel will participate in an environmental awareness training program provided by the project biologist. Construction workers will be informed about any sensitive biological resources associated with the project and that disturbance of sensitive habitat or special-status species is a violation of the federal Endangered Species Act and Section 404 of the Clean Water Act.

Cultural Resources

- If buried cultural materials are unearthed during construction, the contractor will halt construction work near the find until a qualified archeologist can assess its significance. If human remains are unearthed during construction, the contractor will contact the County Coroner to make the necessary findings of origin and disposition in accordance with Public Resources Code 5097.98. In either case, the contractor will contact the USBR.

Chapter 3. Environmental Setting

INTRODUCTION

This section focuses on resources that would be affected by implementation of the proposed action or its alternatives. It is not a detailed description of "the environment at large". Where it can be shown that the proposed action would not or could not affect a particular resource, a concluding statement to that effect will be made in this section and no additional discussion will be included on that resource in Chapter 4, *Environmental Consequences.*

LAND USE AND PLANNING

Existing Land Uses

The proposed project would consist of the repair and replacement of existing outfall structures, located approximately 300 feet from one another, in Colusa County. Butte Creek, which forms the boundary between Colusa and Sutter counties lies immediately to the east. The proposed action would be required to comply with any applicable standards set forth by the general plan adopted by Colusa County.

The proposed action is located in a rural area. The lands surrounding the project site are agricultural or undeveloped. The White Mallard Duck Club, located north of the project area, is a managed wetland that is flooded during the winter to provide waterfowl habitat. Lands to the west and south are actively farmed ricefields that are flooded to provide winter waterfowl habitat. The Butte Sink, consisting of over 10,000 acres of managed wetland, lies to the east.

Repair and replacement of the existing structures does not conflict with any adopted local or regional plans. The land along Drumheller Slough is primarily agricultural land used for rice farming, that is generally flooded in the winter months to provide waterfowl habitat. Both structures are integral to the agricultural productivity of upstream farmlands and duck clubs and are consistent with existing irrigation and drainage facilities in the area and to the south on the other side of Butte Creek. *Because this project consists of the repair and rehabilitation of existing instream structures with no change in function, there will be no significant direct, indirect, or cumulative effects on surrounding land uses.*

Agricultural Resources

The lands surrounding the project site were determined to be Class III soils — moderately good cultivatable land — by the Natural Resources Conservation Service (1907; formerly known as the U.S. Soil Conservation Service). Prime soils are generally Class I-II; however, Colusa County also considers Class III soils "prime" since the value of rice and other crops grown on such soils is high. Prime farm land is land that has the best combination of physical and chemical

characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including adequate drainage, according to current farming methods.

The lands to the east and west of Drumheller Slough are mostly in agricultural production. The White Mallard Duck Club is a managed wetland that lies to the east of Drumheller Slough and to the north of the project area. The facilities are located in areas that are not actively farmed and will have no permanent impact upon agricultural resources. The facilities are needed to maintain agricultural productivity in the area.

A temporary staging area for the work on the Drumheller Slough outfall will be located in the disturbed upland area between Putnam Road and Drumheller Slough. This upland area, owned by Jack Baber, Jr., is currently used as a staging area for farming operations on the west side of Putnam Road. A temporary staging area for work on the White Mallard Slough outfall will be in a disturbed upland area adjacent to and south of the outfall that is currently used as a staging area and borrow source for the White Mallard Duck Club. The project would not interfere with agricultural operations on adjacent lands. *There will be no significant direct, indirect, or cumulative effects on surrounding agricultural lands.*

Utilities

The project site is currently not served by utilities (e.g., electricity or gas) and no utilities will be required or altered either during construction or operation of the project. *There will be no significant direct, indirect, or cumulative effects on utility services.*

Traffic and Circulation

Access to both project sites is provided by existing County and private roads. Vehicle access to the Drumheller Slough outfall site will be from the north via Putnam Road, an existing County Road that runs parallel to and along the west side of Drumheller Slough. The County road portion of Putnam Road ends at Five Points; the road then continues as a private road to the outfall site.

Access to the White Mallard outfall will be via the access road at the base of the RD 1004 levee and an existing access road that runs through the White Mallard Duck Club.

Project construction will generate about 35 total deliveries over the 2- to 3-month construction period. The construction crew of up to four persons will generate up to an additional four round trips per day for workers. Although occasional maintenance or inspection visits will be required by operations personnel, additional vehicle trips above current levels will not be required. Operation of the structure will remain substantially the same; therefore, it would not result in additional vehicle trips.

Since the traffic on area roadways is generally free flowing and the project will generate trips primarily during construction, the proposed action would not adversely affect local roadway levels of service. Roadways will not be significantly impacted by construction activities. As noted in Chapter 2, the contractor will provide appropriate signage warning motorists that heavy equipment may make turns at Putnam Road. *There will be no significant direct, indirect, or cumulative effects on area roadways.*

Air Quality

California is divided geographically into 15 air basins for the purpose of managing the air resources of the state on a regional basis. Areas within each air basin are considered to share the same air masses and are therefore expected to have similar ambient air quality. The project site is in the Sacramento Valley Air Basin and is on the boundary of the Colusa County Air Pollution Control District and the Butte County Air Quality Management District. Both the Colusa and Butte County districts are classified non-attainment transitional for state ozone standards and non-attainment for state PM_{10} standards. Only three of California's 35 air districts are classified attainment for PM_{10}.

Both the Colusa County and Butte County districts have developed a standard threshold of 25 tons per year of PM_{10} for assessing the impacts of temporary or intermittent air quality effects resulting from construction activities. Activities that generate 25 tons or more of PM_{10} are typically large-scale developments with extensive grading. This project would not result in a significant increase in particulate matter emissions and any temporary impacts would be well below the threshold of 25 tons per year of PM_{10}. *There will be no significant direct, indirect, or cumulative effects on ambient air quality.*

Noise

The project site is located in a rural area that experiences lower noise levels than an urban area. Generally, the noise environment in the project area is determined by automobile traffic on local roads, agricultural activities on nearby farmland, and ongoing activities at the duck club. Noise generated by construction activities will not significantly differ from that of the normal agricultural or maintenance activities in the area. There are no human sensitive noise receptors, such as residential uses, motels and hotels, schools, or churches, near the project site. The nearest designated wildlife area is the Gray Lodge Waterfowl Management Area managed by DFG. It is located approximately 4 miles northeast of the project site. Temporary and intermittent noise associated with the proposed action is not expected to affect wildlife within the boundary of this wildlife area because of the distance between the construction project and the wildlife area. Also, construction will be completed by fall, which is when the majority of waterfowl arrive at Gray Lodge. *There will be no significant direct, indirect, or cumulative effects on sensitive noise receptors as a result of project construction or operations.*

Hydrology and Water Quality

The existing outfall structures are located within the floodplain of Butte Creek and the flood bypass and relief system of the Sacramento River State/Federal Flood Control Project via the Butte Basin, and experience regular inundation with seasonal winter storms. Summers are largely without rainfall, and agricultural lands and managed wetlands depend on diversions from Butte Creek and Drumheller Slough for irrigation water. The White Mallard Duck Club begins flooding its lands in early September; water remains until about mid-April when it is drained off.

Surface water quality in Butte Creek and Drumheller Slough is managed by local agencies in accordance with state standards. Jurisdiction relating to permits, citations, and monitoring required for water quality control is managed by a combination of state and local agencies and private organizations.

Criteria for dischargeable allowances into surface waters have been developed by the State Water Resources Control Board, Division of Water Quality. These requirements are used as criteria in granting National Pollutant Discharge Elimination System (NPDES) permits (or waivers), which are obtained through the RWQCB. Any activity or facility that will discharge waste (such as soils from construction) into any surface water, or from which waste may be discharged, must obtain an NPDES permit, or waiver, from the RWQCB. The RWQCB evaluates an NPDES permit application to determine whether the proposed discharge is consistent with the adopted water quality objectives of the basin plan, in accordance with Section 401 of the federal Clean Water Act. The RWQCB does not require a stormwater discharge permit for construction activities that result in soil disturbances less than 5 acres in size (per Section 402 of the Clean Water Act National Pollutant Discharge Elimination System compliance). Therefore, the proposed project will not require a NPDES permit.

Section 404 of the federal Clean Water Act provides that a U.S. Army Corps of Engineers (Corps) permit must be obtained for projects involving location of a structure, excavation, or discharge of dredged or fill material into surface waters of the United States. In some cases, a nationwide permit may be issued for projects involving the installation and maintenance of small water control structures such as the proposed action (Nationwide Permit #3). Nationwide permits are typically granted for projects that fall within a category of having previously been determined to have little or no effect on the environment.

DFG regulates streambed alterations under DFG Code Sections 1601 and 1603 for public agencies and private individuals, respectively. (Refer to *Vegetation* and *Wetland Resources*).

Regulatory Setting

Section 404 of the Clean Water Act - As previously described, installation of small water control structures that result in the placement of fill into waters of the United States generally are covered under Section 404 nationwide permits (at the discretion of the Corps). Nationwide permits do not authorize activities that are likely to jeopardize the existence of a threatened or endangered species (listed or proposed for listing under the federal Endangered Species Act) or that may affect properties listed or eligible for listing in the National Register of Historic Places (56 FR 59134-59138, November 22, 1991). Besides conditions outlined under each nationwide permit, project-specific conditions may be required by the Corps as part of the Section 404 permit.

Federal Endangered Species Act - The USFWS (plants, wildlife, and resident fish) and the National Marine Fisheries Service (NMFS) (anadromous fish and marine fish and mammals) oversee the federal Endangered Species Act. Section 7 of the act mandates that all federal agencies consult with USFWS and NMFS to ensure that the federal agencies' actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. The USBR (acting as NEPA lead agency) is required to consult with NMFS if it determines that the proposed action "may affect" a listed species. This determina-tion is made through preparation of a biological assessment. The USFWS or NMFS will sub-sequently provide a biological opinion on wildlife species that are federally listed or that are proposed for listing as threatened or endangered.

The federal Endangered Species Act prohibits the "taking" of any wildlife species listed as threatened or endangered, including the destruction of habitat that would prevent species recovery. "Taking" is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting to engage in any such conduct. Wildlife federally listed as threatened also are protected from take, but protection of these species may be modified at the time of their listing.

Under Section 9 of the federal Endangered Species Act, the take prohibition applies only to fish and wildlife species. However, Section 9 does prohibit the unlawful removal and reduction to possession, or malicious damage or destruction of, any endangered plant from federal land. Section 9 prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant in non-federal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species, federal species of concern, and species that are proposed or under petition for listing receive no protection under Section 9 of the federal Endangered Species Act.

California Endangered Species Act - The California Endangered Species Act prohibits the take of endangered and threatened wildlife, but habitat destruction is not included in the definition of take. Section 2090 of the California Endangered Species Act requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. DFG administers the act and authorizes take under Section 2081 agreements (except for designated "fully protected species").

California Fish and Game Code - DFG regulates streambed alterations under DFG Code Sections 1601 and 1603 for public agencies and private individuals, respectively.

Biological Setting

Plant Communities - Plant communities in the project area consist of riparian, riverine, disturbed uplands, and agricultural lands. Drumheller Slough is a slow-moving stream with mud/sand bottom and banks. It supports a narrow riparian corridor along its banks dominated by valley oak (*Quercus lobata*), buttonwillow (*Cephalanthus occidentalis*), Fremont cottonwood (*Populus fremontii*), black willow (*Salix gooddingii*), and Oregon ash (*Fraxinus latifolia*). A few western sycamore (*Platanus racemosa*) and California black oak (*Quercus kelloggi*) are interspersed among the more common tree species. Bermuda grass (*Cynodon dactylon*), wild grape (*Vitis californica*), Himalaya berry (*Rubus procerus*) and poison oak (*Toxicodendron diversilobum*) dominate the understory and ground cover.

The uplands are dominated by introduced grasses and herbs; agriculture consists primarily of rice farming. The Drumheller Slough outfall site is located in an open, disturbed area within the riparian corridor. The site is dominated by Bermuda grass, other weedy annuals, and a few willow and cottonwood seedlings less than 4 feet tall. A mature valley oak (24 inch dbh) is located approximately 10 to 15 feet upstream of the centerline of the proposed outfall structure.

The White Mallard outfall site is located in a backwater area devoid of any riparian overstory. The banks are dominated by non-native grasses, interspersed with curly dock (*Rumex crispus*) and a few clumps of Himalaya berry. A disturbed upland area lies adjacent to the outfall site.

Wildlife and Special-Status Species - The Butte Sink (Sink) and associated agricultural lands are one of the most heavily used waterfowl habitats in the Pacific Flyway. It is common to record one to two million waterfowl there during the peak of the fall migration. Although the Sink is not a major waterfowl nesting area, there is significant local production of mallards, wood ducks, and cinnamon teal. The Sink also provides wetland habitat at the critical period of spring migration when most of the rice fields are dry.

Other water birds found in the Sink include great blue, little green, and black-crowned night-herons; great and snowy egrets; and American bittern. Several egret and heron rookeries exist in the taller groves of mature trees. At least 20 species of shorebirds use the Sink, especially on flood-up and draw-down, and rails, coots, and gallinules are found throughout the area.

Approximately 400 to 600 greater sandhill cranes spend each winter in and around the Sink. Roosting habitat is critical for this species in California, and the Sink helps meet this need.

Among the birds of prey that frequent the Sink are the white-tailed kite, Cooper's and sharp-skinned hawks, several species of buteos, golden and bald eagles, and osprey. Occasional use by prairie falcons and peregrines is observed, especially during the fall and winter waterfowl and shorebird migration periods.

Mammals that frequent the Sink include the coyote, red and grey fox, skunk, mink, otter, raccoon, beaver, muskrat, grey squirrel, cottontail, jackrabbit, and black-tailed deer. Small mammals include various mice, ground squirrels, voles, moles, and shrews.

Threatened and Endangered Species - Several species that are federally listed as threatened or endangered have been identified as having habitat in the project vicinity that could be affected by the proposed action. These species have been identified in the attached biological assessment, included as Appendix B.

Fisheries

Three fish species or evolutionarily significant units (ESUs) with special status under the federal Endangered Species Act (ESA) occur in Butte Creek, in the vicinity of the project area: the Central Valley ESU for steelhead (*Oncorhynchus mykiss*) is listed as threatened (March 19, 1998); the spring-run ESU for chinook salmon (*Oncorhynchus tshawytscha*) is listed as threatened (November 15, 1999); and the Sacramento splittail (*Pogonichthys macrolepidotus*) is listed as threatened (March 10, 1999).

Additionally, spring-run chinook salmon are presently listed as threatened under the California Endangered Species Act, and upper Butte Creek has been designated as critical habitat for Central Valley steelhead (64 FR 5740; February 5, 1999). The NMFS has governance over actions that affect the anadromous salmonids; the USFWS has governance over actions that affect Sacramento splittail. The presence of a fourth special-status fish, winter-run chinook salmon, has not been documented in the project area. A petition for listing of the Central Valley fall/late fall-run ESU for chinook salmon was withdrawn; however, it is considered a candidate species.

Chinook salmon - All chinook salmon require cold freshwater streams with suitable gravel for reproduction. Females deposit their eggs in redds that they excavate in the gravel bottom in areas of relatively swift water. Eggs generally hatch in approximately 6 to 12 weeks, and newly emerged larvae remain in the gravel for another 2 to 4 weeks until the yolk is absorbed (Moyle 1976, Beauchamp *et al*. 1983, Allen and Hassler 1986). For maximum survival of incubating eggs and larvae, water temperatures must be between 41EF (5EC) and 57EF (14EC). After emerging, chinook salmon fry tend to seek shallow, near-shore habitat with slow water velocities and move to progressively deeper, faster water as they grow. Juveniles typically rear in fresh water for up to 5 months before migrating to sea. Chinook salmon spend 2 to 4 years maturing in the ocean before returning to their natal streams to spawn. All adult salmon die after spawning (Moyle 1976, Beauchamp *et al*. 1983, Allen and Hassler 1986, Raleigh *et al*. 1986).

Butte Creek supports one of the largest runs of spring-run chinook salmon in the Central Valley (Campbell and Moyle 1991, Yoshiyama *et al*. 1998). The upstream spawning migrations of adult spring-run chinook salmon in Butte Creek occur from February through as late as June in some years (Ward pers. comm.). The chinook salmon then hold in the colder upper reaches of the stream until spawning in late August through early October. Downstream migration of juveniles occurs from November through June (Ward pers. comm.). Early migrants are usually yearling fish that have reared in-stream over the previous summer, whereas later migrants are young-of-the-year.

Adult winter-run chinook salmon migrate through the Sacramento-San Joaquin River Delta and up the Sacramento River from December through June. They remain in the river up to several months before spawning from April through July, with peak spawning activity occurring in May and June. Rearing and emigration begin in July and typically continue through March, but in some years could occur as late as mid-May. All spawning occurs in the main stem Sacramento River; no spawning occurs in tributaries. However, adult winter-run chinook salmon periodically stray into the Butte Creek drainage. This apparently occurs because of the presence of Sacramento River water due to flood conditions or irrigation. These fish apparently die without successfully spawning. No spawning of winter-run chinook salmon is known to occur in the Butte Creek drainage.

Adult fall-run chinook salmon migrate into Butte Creek from September through December and spawn from mid-October through late December. Spawning peaks in late October and November (Ward pers. comm.). Eggs incubate from October through March, and juveniles rear and smolts emigrate from February through June. Although the majority of young fall-run chinook salmon migrate to the ocean during the first few months following emergence, a small number may remain in fresh water and migrate as yearlings. In Butte Creek, spawning and rearing habitat for fall-run chinook salmon is located upstream of the confluence with Drumheller Slough. Butte Creek, in the vicinity of Drumheller Slough, lacks sufficient spawning gravel and has elevated summer water temperatures.

Steelhead - Adult steelhead leave the ocean to migrate up coastal streams and inland rivers from early November through early May, although the majority probably enter fresh water from late December through late April. The timing and rate of migration depend on several factors, including stream discharge and water temperatures. Spawning probably peaks from January through March, depending on the sexual maturity of the fish. Adult steelhead spawn in shallow redds (nests) constructed in relatively clean, loose gravels, typically at the end of pools and at the head of riffles having appropriate water depths and velocities. Unlike Pacific salmon, which all die after spawning, adult steelhead are capable of returning to the ocean after spawning, typically by June of that same year (Shapovalov and Taft 1954).

Steelhead eggs incubate within the gravel and hatch from about 19 to 80 days at water temperatures ranging from 60EF (16EC) to 40EF (4EC), respectively. The average incubation period is approximately 4 to 6 weeks. After hatching, the young fish (alevins) remain in the gravel for an additional 2 to 6 weeks before emerging from the gravel and taking up residence in the shallow margins of the stream. The juvenile fish feed primarily on aquatic and terrestrial insects for periods ranging from less than 1 year to 4 years. Most juvenile steelhead spend 1 to 3 years in fresh water before emigrating to the ocean as smolts (Shapovalov and Taft 1954). They typically migrate to the ocean as streamflow declines and water temperature increases in April, May, and June. Steelhead generally live in the ocean for 1 to 3 years before returning to fresh water to spawn.

In Butte Creek, spawning and rearing habitat for steelhead is located upstream of the project area. The project area lacks sufficient spawning gravel and has warm summer water tempera-tures that exceed tolerance levels of juvenile steelhead. The steelhead population is probably small, but

outmigrants have been collected in Butte Creek in DFG screw traps both upstream and downstream of the confluence of Drumheller Slough. Rearing juveniles, which may have been steelhead, have been collected in Dry Creek, about 22 miles upstream from the project area (Ward pers. comm.).

Sacramento Splittail - Sacramento splittail are freshwater fish capable of tolerating moderate levels of salinity (10 to 18 parts per thousand [ppt]) (59 FR 862, June 5, 1994). Food includes opossum shrimp, earthworms, clams, insect larvae, and other benthic invertebrates (Moyle *et al*. 1995). This species can grow to 40 cm in length and attain 5 to 7 years of age. Both male and female Sacramento splittail become sexually mature by their second winter, when they are about 10 cm in length. Sacramento splittail spawn during late April and May in Suisun Marsh and from early March through May in the upper Delta and lower reaches of the Sacramento and San Joaquin rivers (Moyle *et al*. 1989). However, spawning has been observed as early as January and as late as July. Eggs are adhesive and are deposited over flooded streambanks or aquatic vegetation when water temperatures are 9º to 20ºC (Moyle 1976, Wang 1986). Spawning generally occurs in the lower reaches of rivers or large or dead-end sloughs (Moyle *et al*. 1995). Larvae initially rear near spawning sites in shallow, weedy areas. As they grow, they move into deeper water (Wang 1986).

In the Butte Creek drainage, juvenile Sacramento splittail have been collected in Little Butte Creek near the Western Canal, approximately 14 miles upstream of the project area (Ward pers. comm.). The Butte Sink, located downstream of the project area, supplies potential spawning habitat because it contains extensive areas of flooded vegetation in winter and spring (Ward pers. comm.). Splittail may utilize Drumheller Slough; however, they would have already left the project area by mid-July and would not be expected to return until after mid-October or until flooding occurs in the Butte Creek drainage.

Wildlife

Listed Wildlife Species with Potential to be Affected - There are no listed wildlife species that would be affected by the proposed action.

Listed Animal and Plant Species Not Likely to be Affected - The following wildlife species may occur in the general project area, but are not likely to be affected by the proposed action. This is because most of these species have not been observed in the area, or have only rarely been observed on a transient basis, or suitable habitat components are not present in the project area. The **giant garter snake** (*Thamnophis gigas*) is federally and state-listed as threatened. The species once ranged throughout the wetlands of California's Central Valley from Buena Vista Lake near Bakersfield in Kern County, north to the vicinity of Chico in Butte County (Hansen and Brode 1980). Giant garter snakes appear to have been extirpated from the San Joaquin Valley south of Mendota, Fresno County (Hansen and Brode 1980, Stebbins 1985, Rossman and Stewart 1987). The present known distribution extends from near Chico south to the vicinity of Burrell, Fresno County (DFG 1993).

Giant garter snakes require freshwater wetlands, such as marshes, sloughs, and low gradient streams such as those found in the Butte Sink. Permanent wetlands are of particular importance, because they provide habitat over the summer and early fall when seasonal wetlands are dry. Giant garter snakes have adapted to vegetated, artificial waterways, especially those associated with rice cultivation.

This species appears to be absent from most permanent waters that support established populations of predatory game fishes. Introduced bass, sunfish, and catfish compete with giant garter snakes for prey and undoubtedly prey upon the snake as well (Hansen 1988). The species also appears to be absent from natural or artificial waterways that undergo routine mechanical or chemical weed control or compaction of bank soils (Hansen 1988, Hansen and Brode 1993).

Field studies conducted by Hansen have shown that giant garter snakes are associated with aquatic environments that contain the following resources: 1) sufficient water during the active (summer) season to supply food (fish and amphibians) and cover; 2) grassy banks for basking; 3) emergent vegetation for cover during the active season; and 4) high ground or uplands that provide cover and refuge from floodwaters during the dormant [winter] season (Hansen 1988, Hansen and Brode 1993).

As discussed in the Biological Assessment (Appendix B), giant garter snakes will not be adversely impacted by the proposed action because the project area lacks many of the habitat components required by this species. Also, prior surveys for this species in Drumheller Slough have produced negative results. Disturbance to the streambank and associated riparian habitat will be localized and site specific.

The **American peregrine falcon** (*Falco peregrinus anatum*) is state-listed as endangered. It was formerly listed by the USFWS as endangered, but was delisted on August 25, 1999. Peregrine falcons breed within 50 miles of the Upper Butte Basin and nests are typically constructed on ledges of large cliffs. Wintering habitats are varied and include wetlands and forested areas. Peregrines prey upon birds and are attracted to habitats that support large avian populations. No peregrines have been observed in the project area.

The **bald eagle** (*Haliaeetus leucocephalus*) is federally listed as threatened and state-listed as endangered. It breeds within 50 miles of the Upper Butte Basin. Nesting territories are established near lakes, reservoirs, and rivers. Northern populations of the Pacific Region winter in the Sacramento Valley. Bald eagles are attracted to wetlands, where they hunt and scavenge mostly waterfowl, and to rivers, where they prey upon fish. Day-time perches and nocturnal roosting sites are another critical winter habitat element; these typically consist of large trees with at least one high prominent perch, or power poles. Valley oaks, western sycamores, and Fremont cottonwoods provide these characteristics. A goal of establishing 15 active territories and eight nesting pairs in the Sacramento Valley and surrounding foothills is identified in the recovery plan for this species (USFWS 1986). Bald eagles may occasionally be observed flying over the project area, especially during the winter months when high concentrations of waterfowl are present in the nearby refuges and other managed wetlands.

The **willow flycatcher** (*Empidonax traillii*) is state-listed as endangered. Willow flycatchers were once common summer residents in California with an extensive breeding range associated with dense riparian wetlands. There are five remaining populations in the Sierra Nevada. Willow flycatchers also occur on the Kern, Santa Margarita, San Luis Rey, and Santa Ana rivers in association with dense willow thickets. They are also reported from northeastern California in the Warner Mountains and on the Modoc National Wildlife Refuge (NWR). Willow flycatchers are present in the vicinity of the project area as spring and fall migrants. Their spring migration period is from late April through May, and their fall migration period, in which willow flycatchers occur in greater numbers, is from mid-August through mid-October. Willow flycatchers could occur on a transient basis along Drumheller Slough during project construction; however, they would not be impacted by the proposed action.

The **western yellow-billed cuckoo** (*Coccyzus americanus occidentalis*) is state-listed as endangered. This species occurs on the Santa Ana, Amargosa, Lower Colorado, and Kern rivers and in the Owens and Sacramento valleys of California. Mixed riparian and cottonwood riparian forests are required for nesting and foraging. Nesting typically occurs from mid-June to late August on horizontal branches of willows concealed from view. Foraging habitat consists of mature and early-seral stage mixed forests and mature cottonwood forests, where they prey upon katydids, green caterpillars, grasshoppers, and tree frogs (Anderson and Laymon 1989). No yellow-billed cuckoos have been observed in the project area.

The **bank swallow** (*Riparia riparia*) is state-listed as threatened. This species is restricted to vertical bluffs or riverbanks, where they create nests by burrowing into fine-textured soils. Bank swallows breed in colonies from March through August. Most of California's remaining population nests along the Sacramento River. In 1986, 37 colonies with a total of 19,060 burrows were found along the Sacramento River in the vicinity of the Sacramento NWR. By 1996, the number of colonies had declined to 30, representing 8,140 burrows (Jones & Stokes Associates 1999). No bank swallows have been observed in the project area.

The **Swainson's hawk** (*Buteo swainsoni*) is state-listed as threatened. Swainson's hawks breed in western North America and winter in Central and South America as far south as Argentina. A small population resides year round in the Delta. Most birds are present in California only from March through September; the nesting period is from April through August. To establish territories, Swainson's hawks require large, open grasslands and pastures with suitable nesting trees and a large prey base consisting of rodents, especially California voles (*Microtus californicus*) (DFG 1991). Swainson's hawks nest along the upland edges of riparian forests, in oak savannas, and in groves or lone trees in agricultural fields. Valley oak, Fremont cottonwood, black walnut, and large willow trees with heights of 41 to 82 feet are typically used for nesting. No Swainson's hawks have been observed in the project area.

The **greater sandhill crane** (*Grus canadensis tabida*) is state-listed as threatened. Sandhill cranes winter in the Central Valley and breed in the Great Basin Province of northeastern California and Oregon (USFWS 1983). They are present in the Butte Basin from September through mid-March. Rice fields provide important foraging habitat and, when flooded, also provide loafing and roosting habitat (Pogson and Lindstedt 1988). Cranes also graze in

grasslands and pastures and forage for tubers and invertebrates in shallow flooded and drained emergent wetland habitats. Greater sandhill cranes are rarely observed in the project area.

The **valley elderberry longhorn beetle** (VELB) (*Desmocerus californicus dimorphus*) is federally listed as threatened and is known only from its host plant, the elderberry (*Sambucus* spp.). Adults, which feed on foliage, are present from March through early June and breed during this period. Eggs are laid on leaves, branches, bark crevices, and trunks, and hatch within a few days. Larvae bore through the stem pith, creating a pupation gallery. Adults chew through bark, creating exit holes. Upon emergence, the adults occupy foliage, flowers, and stems of the host plant; this life cycle is believed to take 2 years. VELBs are endemic to riparian habitat of the Sacramento and San Joaquin valleys. Elderberry shrubs occur in mixed riparian forests and savannas and are the dominant plant in elderberry savannas (Holland 1986). All elderberry shrubs with stems larger than one inch in diameter are considered habitat for the VELB by the USFWS. Although elderberry shrubs occur along Butte Creek and elsewhere along Drumheller Slough, the proposed action will not affect the VELB because there are no elderberry shrubs within the project area.

Other Special-Status Species - Other special-status species include federal species of concern and state species of special concern. While not afforded the protection of federally listed and state-listed endangered and threatened species, these species are potential candidates for listing. State species of special concern are considered threatened or rare because of declining habitat, restricted population distribution, or small population size. Information is often lacking for listing as threatened or endangered.

No federal species of concern are known to occur in the project area. State species of special concern that could be present in the project area include the northwestern pond turtle (*Clemmys marmorata marmorata*), white-faced ibis (*Plegadis chihi*), long-billed curlew (*Numenius americanus*), double-crested cormorant (*Phalacrocorax auritus*), and tricolored blackbird (*Agelaius tricolor*). These species are dependent on various kinds of freshwater wetlands and uplands. The loss and degradation of wetland and grassland habitats is the major factor contributing to the population declines of these species. The project is not expected to result in adverse impacts to any of the species identified above due to the lack of suitable supporting habitat.

Cultural Resources

The following discussion is based on a letter provided by the California Archeological Inventory, Northwest Information Center, at Sonoma State University.

A review of the records and literature on file indicated that the proposed project area contains no recorded Native American or historic cultural resources. State and federal inventories list no historic properties within the project area.

Native American archaeological sites in this portion of Colusa County tend to be situated along major river channels, such as the Sacramento, and elevated above the flood zone. The project area is below the historic flood zone. Given the environmental setting and ethnographic information, there is a low potential for Native American sites in the project area.

A review of historic literature and maps on file at Sonoma State University gave no indication of historic archaeological sites or historic structures in the project area. The 1867 General Land Office map depicted the project area as "swamp and overflowed land". Therefore, there is a low probability of identifying historic cultural resources in the project area. No further archival or field study was recommended.

No cultural resources were found in the project area during reconnaissance surveys. As stated in the project description and required under state law, the contractor will notify the appropriate authorities should cultural resources be inadvertently uncovered during construction. Prehistoric resources include chert or obsidian flakes, projectile points, mortars, and pestles; and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic resources include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits, often in old wells and privies. *There will be no significant direct, indirect, or cumulative effects on cultural resources.*

Hazardous Materials

Potential health and safety hazards related to the proposed action include the possible use of, or accidents involving, hazardous materials during the course of implementing the proposed action since construction of the proposed action would occur adjacent to and within Drumheller Slough.

There is nothing inherent in the description of the proposed action that would require a permit related to creation of a hazardous waste site or intentional discharge of hazardous materials. If an accidental spill of hazardous or toxic materials were to occur that affected, or had the potential to affect, Drumheller Slough or Butte Creek, it would trigger notification requirements of the RWQCB, the DFG, and California Department of Toxic Substances Control.

Discussions were held with project engineers to identify construction procedures and equipment to be used for the repair and rehabilitation of the two outfall structures. Materials hazardous to humans, wildlife, and sensitive environments which would be present during project construction include petroleum products and concrete curing compounds. Proper handling of these materials will avoid danger to humans, wildlife, and sensitive environmental resources. There is very little risk if proper procedures are followed.

A spill-prevention and countermeasure plan will be prepared and implemented as part of the proposed action. No hazardous materials will be stored on-site. All refueling will occur away from the watercourse and equipment will be maintained to avoid any leakage. Special precautions will be taken during construction to avoid accidental spills and contamination of water resources. Agency notification protocols will be adhered to in case of an accidental spill or discharge to the

environment. California Occupational Safety and Health Administration (OSHA) Title 8 requirements and California Environmental Protection Agency requirements for handling and proper use of these materials were reviewed. *There will be no significant direct, indirect, or cumulative effects involving hazardous materials.*

Visual Quality

The proposed action is located in a remote and rural area. The visual character of the site is not considered sensitive because of its remoteness and the disturbed character of the surrounding agricultural lands. The project vicinity is not identified as a scenic vista nor is it located adjacent to a Scenic Highway. Visual appearance of the completed facility will be consistent with other facilities in the area. The proposed action will not be lighted. Construction will not occur at night; therefore, no artificial lighting will be necessary. *There will be no significant direct, indirect, or cumulative effects on sensitive visual resources.*

Geological Hazards

The project area is located in the Sacramento Valley. The site itself is located in an area of marsh and floodplain deposits, with foundation materials being a mixture of silt, clay, sand, and organics. The primary risks of geologic hazards to the proposed action include groundshaking, liquefaction, and erosion.

Groundshaking at the site could be caused by the rupture of nearby faults. There are no active faults in Colusa County (California Division of Mines and Geology 1994); however, active and potentially active faults nearby could cause low to moderate groundshaking. The structures are designed to withstand the expected level of groundshaking. *There will be no significant direct, indirect, or cumulative effects as a result of groundshaking.*

Liquefaction may occur as a result of strong groundshaking during earthquakes; the term liquefaction refers to the temporary transformation of granular sediment or fill from a solid state to a liquid state. There is no significant potential for liquefaction due to the lack of clean sands and the low level of groundshaking at the site. *There will be no significant direct, indirect, or cumulative effects as a result of liquefaction.*

Erosion is a process by which soils and rocks are broken down or fragmented and then transported. Water is the dominant agent of erosion. Wind can also cause erosion, depending upon the soil texture, slope, extent of vegetative cover, and moisture. Revetment and velocity dissipation devices will eliminate the potential for erosion at the outfalls. The project is specifically designed to correct erosion problems at these facilities. The potential for wind-caused erosion is not significant due to the lack of surrounding open space and the limited amount of topsoil that will be exposed during construction. *There will be no significant direct, indirect, or cumulative effects as a result of expansive soils.*

Recreation

Recreational opportunities are available in many locations in the vicinity of the project area. These include passive recreational opportunities, such as birdwatching, photography, and hiking at the nearby refuges. Hunting is available both in the refuges and at several private duck clubs in Colusa, Butte, and Sutter counties. The White Mallard outfall is located adjacent to an existing recreation resource area, the White Mallard Duck Club. There are no applicable permits and regulations pertaining to recreation that would be required for implementation of the proposed action. *There will be no significant direct, indirect, or cumulative effects on local or regional recreational resources.*

Socioeconomics

The project area is located in Colusa County. Colusa County had an estimated population of 18,572 in 1998 (California Department of Finance 1999). The project is small, with approximately two people per day anticipated to work at the site during the two- to three-month construction period. The project will not have a substantial effect on employment, capital, or population in the County. It is likely that the contractor will use existing crews to complete the project. The project is not likely to attract either untrained or trained workers to the region. *There will be no significant direct, indirect, or cumulative effects on socioeconomic conditions.*

Chapter 4. Environmental Consequences

As in Chapter 3, **Environmental Setting**, the following discussion of effects and mitigation measures is organized by resource topic. The resource topics analyzed in Chapter 4 are those resources present in, or adjacent to, the project area that could be affected by project construction or operations:

- hydrology and water quality
- biological resources

Potential impacts on the environment related to project planning, construction, and operation are described. For each resource section, mechanisms that could cause adverse environmental effects either directly, indirectly, or cumulatively are discussed.

Project effects fall into the following three categories: temporary, short-term, and long-term. These terms are defined as follows:

- A "temporary" effect would occur only during construction activities.
- A "short-term" effect would last from the time construction ceases to within three years following construction.
- A "long-term" effect would last longer than three years following construction and restoration.

Implementation of all the mitigation measures specified in this EA/IS would reduce and/or eliminate all temporary, short-term, and long-term effects.

The following terminology is also used to describe effects:

- A "residual" effect is an effect that would remain after mitigation measures are implemented.
- A "cumulative" effect is an effect of the proposed action compounded with effects from other past, present, or reasonably foreseeable projects.

PROPOSED ACTION

Hydrology and Water Quality

Approach and Methodology

The potential for adverse effects on hydrologic conditions and water quality depends on the intensity, duration, and timing of the various disturbances to aquatic and riparian resources. Federal and state agency policies are aimed at managing these three factors, keeping the risk of water quality degradation within safe levels to protect human and aquatic life.

The intensity of an effect relates not only to its location and areal extent but also to "typical mean and extreme values observed in the ecosystem". State water quality standards set threshold values over (or under) which the exceedance may become significant. In addition to water quality standards, aquatic and riparian habitats have baseline conditions that need to be maintained (see discussion in **Biological Resources** section).

The duration of effects ("temporary", "short-term", and "long-term") is defined at the beginning of this chapter. Under the permitting process discussed under **Water Resources** in Chapter 3, agencies may issue a variance (or waiver), recognizing that certain exceedances of standards are permissible for periods of limited duration.

The timing of water quality effects is important because timing can affect whether reproductive and migratory cycles of aquatic biota or other seasonal beneficial uses are impacted. For projects where in-water work is needed, state and federal resource agencies have established preferred construction windows to minimize the potential effects of in-water construction on the reproductive and migratory cycles of aquatic organisms, particularly anadromous salmonids (see discussion in **Biological Resources** section).

Possible interactions of the intensity, duration, and timing of effects must be considered in determining the environmental significance of an action. For example, an instantaneous, intense event occurring in a season when beneficial uses are not operable (compatible timing) may not be considered adverse, while a chronic moderate event occurring over entire seasons or critical life stages of aquatic life cycles (incompatible timing) may be considered adverse.

Cumulative effects can occur if minimal effects on water quality from the proposed action compound with effects from other past, present, or reasonably foreseeable projects, or if numerous minimal effects from the proposed action compound within the same drainage and result in an overall adverse effect on water quality.

Direct and Indirect Impacts

Impact: Temporary Transport of Sediment to Waterbodies. There is a potential for surface runoff to transport disturbed soils into Drumheller Slough, which could result in temporary increases in turbidity and sedimentation downstream of the construction site. Temporary increases in turbidity or sedimentation could be adverse if the rate of sediment generation exceeds the rate of sediment transport in a stream, which is a frequent occurrence during wet weather. Excessive sediment in the water column (increased turbidity) can interfere with fish feeding behavior and with photosynthesis in aquatic flora. Sediment deposition on the channel bed can displace aquatic fauna and prevent adequate water circulation through fish eggs in spawning redds. This potential effect is not considered adverse as long as mitigation measures W-1 and W-2 are implemented.

Mitigation Measure W-1:

- The contractor will employ best management practices (e.g., sediment containment devices, protection of construction spoils, and proper installation of cofferdams) to minimize erosion and sediment transport to Drumheller Slough. Erosion control measures will include storing construction spoils out of the stream (above the ordinary high-water mark) and protecting receiving waters from these erosion source areas with sedimentation fences or other effective sediment control devices. Measures will include at a minimum:

    - minimize work or equipment operation in flowing water during in-channel activities by constructing cofferdams and diverting all flows around construction sites;

    - conduct all construction work according to site-specific construction plans that minimize the potential for sediment input to the aquatic system;

    - identify all areas requiring clearing, grading, revegetation, and recontouring and minimize the areas to be cleared, graded, and recontoured;

    - cover bare areas with mulch and revegetate all cleared areas with appropriate native, non-invasive species;

    - recontour channel areas dewatered for construction prior to removal of cofferdams; and

    - construct sediment catch basins across the channel immediately below the project area when performing in-channel construction to prevent silt- and sediment-laden water from entering the main flow; accumulated sediments would be periodically removed from the catch basin.

Mitigation Measure W-2:

- Instream construction will be limited to the summer low-precipitation period (July 15 through October 15). Impacts on steelhead, spring-run chinook salmon, and Sacramento splittail will be avoided because these species do not occur in or near the project area during this period. Outmigrating or rearing fall-run chinook salmon juveniles should not be present. The primary occurrence and migration of fall-run chinook salmon adults also would be avoided.

Impact: Temporary Disruption of Bed and Bank Sediments During Construction. Removal of the existing outfalls and construction of the new structures could cause disruption of the bed and bank sediments. This sediment disruption could result in some suspension of sediment in the water column and a corresponding increase in turbidity and sedimentation downstream. This effect is not considered adverse as long as the contractor implements mitigation measures W-1 and W-2 described above.

Impact: Degraded Water Quality from Accidental Spills of Hazardous Materials during Construction. Hazardous materials associated with the proposed action would be limited to petroleum products and concrete curing compounds. Spills of these substances could contaminate drainages, soils, and other environmentally sensitive areas. This potential effect is not considered adverse as long as mitigation measure W-3 is implemented.

Mitigation Measure W-3:

- The contractor will be required to establish a spill-prevention and countermeasure plan before project construction that includes strict on-site handling rules to keep construction and maintenance materials out of drainages and waterways. The plan will include measures to:

  - prevent raw cement, concrete or concrete washings, concrete curing compounds, oil or other petroleum products, or any other substances that could be hazardous to aquatic life from contaminating the soil or entering watercourses;

  - immediately clean up all spills according to the spill-prevention and countermeasure plan and immediately notify DFG of any spills and cleanup procedures;

  - remove vehicles from the normal high-water area of the slough before refueling and lubricating; and

  - clean all equipment prior to use and maintain to prevent any leakage of fuel or lubricants.

Cumulative Effects

The cumulative effect of a temporary, small increase in sediment load would be minimal. Because the direct and residual effects of construction spoils erosion would be minor, no cumulative effects would be expected. Successful spill prevention would result in no cumulative effects.

Biological Resources

This section focuses on identified endangered or threatened wildlife species known to exist in the project vicinity that could be affected by the construction or operation of the proposed action. The following analysis incorporates by reference the attached Biological Assessment included as Appendix B.

Wildlife

Approach and Methodology - Information on potentially affected species was obtained from the literature, agency staff, and prior biological studies conducted in the area.

Mitigation measures were designed to fully avoid effects to the extent feasible. If effects could not be fully avoided, mitigation measures were designed to minimize the extent of the potential effects. Mitigation measures are summarized from the Draft Programmatic Environmental Assessment for Anadromous Fish Restoration Actions in the Butte Creek Watershed (USFWS 2000).

Direct and Indirect Impacts.

Impact: Short-Term Disturbance of Common Wildlife Species. Project construction activities could temporarily disturb riparian habitat that supports many common wildlife and plant species. Animals within these habitats could be temporarily displaced during repair and rehabilitation of the two outfall structures; however, the habitat types affected by the proposed action are abundant in the project area. In addition, activities related to the proposed action would be temporary, and restoration efforts such as replanting with the appropriate native, non-invasive plants within the disturbance area would begin immediately following construction.

The following mitigation measure will be required prior to and during construction to ensure that the proposed action does not result in adverse effects to sensitive habitat or wildlife species.

Mitigation Measure B-1:

- The project engineer will stake the limits of the construction footprint in the field. The removal of riparian vegetation will be limited to fast growing shrubs, vines, and herbaceous vegetation. Work on the Drumheller Slough outfall structure in the vicinity of the 24-inch dbh oak tree will employ an arborist-recommended approach for trimming roots and monitoring the tree for stress.

Mitigation Measure B-2:

- Upon the completion of construction, the contractor will plant willow seedlings or pole cuttings within the riprapped bank.

Fisheries

Approach and Methodology - To complete the impact assessment, information on species life history and on the fisheries resources of Butte Creek and Drumheller Slough was obtained from the literature and DFG personnel. Project impacts on special-status fish species were assessed by evaluating construction impacts on fish habitat, by comparing species and life-stage presence in the project area with the proposed construction schedule, and by comparing pre-project and post-project operation of the outfall structures.

Mitigation measures were designed to fully avoid effects to the extent feasible. If effects could not be fully avoided, mitigation measures were designed to minimize the extent of the potential effects. Mitigation measures are summarized from the Draft Programmatic Environmental Assessment for Anadromous Fish Restoration Actions in the Butte Creek Watershed (USFWS 2000).

Direct and Indirect Effects.

Impact: Temporary Disturbance of Fish Habitat. The impacts of the proposed action on fish are primarily related to soil erosion and sedimentation in the streams resulting from construction and fill activity. These processes could result in temporary degradation of water quality and fish habitat. Excessive sediment deposited in or near stream channels can degrade aquatic habitats. Sediments can smother developing eggs, degrade spawning habitat, and decrease food production. Increased turbidity can increase fish mortality, reduce feeding opportunities for fish, and cause fish to avoid biologically important habitat. In addition to mitigation measures W-1 through W-3 (see **Hydrology and Water Quality** section), the following mitigation measure will be required during construction to ensure that the proposed action does not result in adverse effects on fish habitat.

Mitigation Measure B-3:

- Construction personnel will participate in a worker environmental awareness program. Workers will be informed about the sensitive biological resources associated with the project and that illegal disturbance of special-status fish or their habitat (e.g., creek channel and riparian vegetation) is a violation of the federal Endangered Species Act.

Impact: Short-Term Degradation of Fish Habitat from Accidental Seepage of Hazardous Materials into Streams. Construction materials, such as raw cement, concrete, or concrete

washings, could adversely affect water quality if accidental spills occurred during project construction. Hazardous materials associated with the proposed action would be limited to concrete curing compounds and petroleum products. A spill of these substances could contaminate drainages and adversely affect fish or their habitat. Increased pollutant concentrations could limit fish production, abundance, and distribution by reducing egg survival and causing direct mortality of fish or their prey. This potential effect would not be considered adverse as long as mitigation measures W-3 is implemented.

Impact: Temporary and Long-Term Effects on Fish Migration. Construction activities will occur between July 15 and October 15 and will consequently avoid the primary migration period for steelhead and chinook salmon. Outmigrating juveniles are not expected to be present in the project area during construction, nor are adult steelhead or spring-run chinook salmon. However, adult fall-run chinook salmon may be present on their way to upstream spawning areas in Butte Creek (Ward pers. comm.). The project area is within, and adjacent to, Drumheller Slough upstream of the confluence with Butte Creek. Temporary barriers associated with construction activities will be outside of the migration corridor and are not likely to adversely affect juvenile or adult steelhead and chinook salmon migration.

Once construction of the two outfalls has been completed, fish will be prevented from straying into Drumheller Slough and the White Mallard Duck Club from Butte Creek thereby reducing stranding and entrainment; reducing fish mortalities from warm water temperatures and poaching; and reducing injuries during migration. These are beneficial impacts.

Cumulative Effects

No cumulative effects on biological resources would result from the proposed action. Any temporary or short-term impacts would be minor and of short duration. Long-term effects on fisheries would be beneficial.

NO-ACTION ALTERNATIVE

Under the No-Action Alternative, none of the effects of ground-disturbing activities associated with repair and rehabilitation of the outfall structures would occur. The damaged structures would not be upgraded and replaced, and fish could continue to stray into Drumheller Slough and the White Mallard Duck Club from Butte Creek.

The implementation of this alternative would not satisfy the need to protect, enhance, and restore critical habitat and natural communities of native, resident, and migratory wildlife species. Furthermore, the alternatives analysis already completed concluded that the proposed action is the most feasible alternative as well as the environmentally preferred alternative.

RESIDUAL EFFECTS

Residual effects are defined as effects that would remain even with the implementation of mitigation measures.

No residual effects related to land use and planning, agricultural resources, utilities, traffic and circulation, air quality, noise, cultural resources, hazardous materials, visual quality, recreation, or socioeconomics would result from construction or operation of the proposed structures as proposed or from the mitigation measures recommended in this EA/IS.

With appropriate mitigation measures, any sediment runoff from construction spoils passing through sediment control devices would be minor. Successful spill prevention would result in no residual effects on either water quality or fisheries. Residual effects related to turbidity and sediment transport would be minimal and temporary.

Finally, the new structures would benefit anadromous fish that might otherwise stray into Drumheller Slough and the White Mallard Duck Club, becoming stranded. With the existing structures, continued failure is imminent.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the proposed action. All adverse impacts associated with the proposed action would be generated during the construction of the replacement structures. Potential impacts would be temporary and intermittent and would cease when construction is completed, as long as recommended mitigation measures are implemented by the project proponent and engineering contractor. The proposed action meets the objectives of the project to improve conditions for migratory fish in Butte Creek.

The No-Action Alternative would not result in construction-related impacts; however, it does not meet the objectives of the project because the existing structures are prone to failure and allow fish from Butte Creek to become stranded in adjacent waters.

In addition to the No-Action Alternative, continued repair of the outfall structures was considered. This alternative was rejected because repeated failure would continue to pose threats of stranding fish. This alternative does not meet the basic objective of the action.

Chapter 5. REFERENCES

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APPENDIX A

ENVIRONMENTAL CHECKLIST FORM

1. **Project Title:** Drumheller Slough Outlet and White Mallard Outfall Improvements

2. **Lead Agency:** Reclamation District No. 1004
   134 Fifth Street
   Colusa, CA 95932

3. **Contact Person and Telephone Number:** Gary Bailey
   Telephone (530) 458-7959

4. **Project Location:** Drumheller Slough just north of the confluence of Butte Creek
   Colusa County [T17N, R1W, unsurveyed section]

5. **Project Sponsor:** The project is a cooperative effort between Reclamation District 1004, U.S. . Fish and Wildlife Service, and private property owners.

6. **General Plan Designation:** Not applicable

7. **Zoning:** Not applicable

8. **Project Description:** (see page 1 of Initial Study)

9. **Surrounding Land Uses:** The project site is surrounded by agriculture, vacant land, and a duck club.

10. **Other Public Agencies whose Approval is Required:** U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, National Marine Fisheries Service, California Department of Fish and Game, Regional Water Quality Control Board

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

___ Aesthetics	___ Agriculture Resources	___ Air Quality
___ Biological Resources	___ Cultural Resources	___ Geology/Soils
___ Hazards and Hazardous Materials	___ Hydrology/ Water Quality	___ Land Use/Planning
___ Mineral Resources	___ Noise	___ Population/Housing
___ Public Services	___ Recreation	___ Transportation/Traffic
___ Utilities/Service Systems	___ Mandatory Findings of Significance	

Note: None of the factors listed above are checked because the project will not result in any impacts that are potentially significant. Measures have been incorporated into the project design to reduce all impacts to less-than-significant levels.

DETERMINATION

On the basis of this initial evaluation:

I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared. ___

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared. X

I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required. ___

I find that the proposed project **MAY** have a "potentially significant impact" or potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed. ___

I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required. ___

Gary Bailey, Operations Manager
Reclamation District No. 1004

Date

ENVIRONMENTAL CHECKLIST

Introduction

The following Checklist contains the environmental checklist form presented in Appendix G of the 1999 CEQA Guidelines. The checklist form is used to describe the impacts of the proposed project. A brief explanation of all answers in the following checklist is provided in the attached Initial Study/Environmental Assessment.

For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared.

Potentially Significant With Mitigation Incorporated: An impact that requires mitigation to reduce the impact to a less-than significant level.

Less-Than-Significant Impact: Any impact that would not be considered significant under CEQA relative to existing standards.

No Impact: The project would not have any impact.

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
1.	**LAND USE AND PLANNING.** *Would the project:*				
	a. Physically divide an established community?	☐	☐	☐	■
	b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating on environmental effect?	☐	☐	☐	■
	c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
2.	**AGRICULTURE RESOURCES:** *In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:*				
	a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program in the California Resources Agency, to non-agricultural use?	☐	☐	☐	■
	b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	■
	c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
3.	**POPULATION AND HOUSING.** *Would the project:*				
	a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	■
	b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■
	c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

Issues			Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
4.	**GEOLOGY AND SOILS.** *Would the project:*					
	a.	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i.	Rupture of a known earthquake fault, as delineated on the most recent Alquist - Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	■
	ii.	Strong seismic ground shaking?	☐	☐	☐	■
	iii.	Seismic-related ground failure, including liquefaction?	☐	☐	☐	■
	iv.	Landslides?	☐	☐	☐	■
	b.	Result in substantial soil erosion, or the loss of topsoil?	☐	☐	■	☐
	c.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	■
	d.	Be located on expansive soils, as defined in Table 18-1-13 of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	■
	e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	■

Issues			Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
5.	**HYDROLOGY AND WATER QUALITY** *Would the project:*					
	a.	Violate any water quality standards or waste discharge requirements?	☐	■	☐	☐
	b.	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	■
d.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	■
e.	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	■
f.	Otherwise substantially degrade water quality?	☐	☐	■	☐
g.	Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	■
h.	Place within a 100-year floodplain structures which would impede or redirect flood flows?	☐	☐	■	☐
i.	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	■
j.	Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
6.	**AIR QUALITY.** *Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations: Would the project:*				
a.	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
b.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	■
c.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	■	☐
d.	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	■
e.	Create objectionable odors affecting a substantial number of people?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
7.	**TRANSPORTATION/TRAFFIC** *Would the project:*				
a.	Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	■	☐
b.	Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	■
c.	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	■
d.	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	■
e.	Result in inadequate emergency access?	☐	☐	☐	■
f.	Result in inadequate parking capacity?	☐	☐	☐	■
g.	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
8.	**BIOLOGICAL RESOURCES.** *Would the project:*				
a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	■	☐	☐
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	■	☐
c.	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	■	☐
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☐	■	☐	☐
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	■
f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
9.	**MINERAL RESOURCES.** *Would the project:*				
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☐	■
b.	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	■

Issues			Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
10.	**HAZARDS AND HAZARDOUS MATERIALS.** *Would the project:*					
	a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	■
	b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	■	☐
	c.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	■
	d.	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	■
	e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
	f.	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
	g.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
	h.	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	■

Issues			Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
11.	**NOISE.** *Would the project result in:*					

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a.	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	■	☐
b.	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	■	☐
c.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	■
d.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	■	☐
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■
f.	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
12.	**PUBLIC SERVICES.** *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:*				
a.	Fire protection?	☐	☐	☐	■
b.	Police protection?	☐	☐	☐	■
c.	Schools?	☐	☐	☐	■
d.	Parks?	☐	☐	☐	■
e.	Other public facilities?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
13.	**UTILITIES AND SERVICE SYSTEMS.** *Would the project:*				
a.	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	■
b.	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	■
c.	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	■
d.	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	■
e.	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	■
f.	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	■
g.	Comply with federal, state, and local statutes, and regulations related to solid waste?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
14.	**AESTHETICS.** *Would the project:*				
a.	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	■
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	☐	■
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	■	☐
d.	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
15.	**CULTURAL RESOURCES.** *Would the project:*				
	a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	■
	b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	■
	c. Directly or indirectly destroy a unique paleontological resource or unique geologic feature?	☐	☐	☐	■
	d. Disturb any human remains, including those interred outside of formal cemeteries.	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
16.	**RECREATION.**				
	a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	■
	b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	■

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
17.	**MANDATORY FINDINGS OF SIGNIFICANCE.**				
	a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	■	☐	☐

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
b.	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	■	☐
c.	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	■

APPENDIX B

Biological Assessment

Impacts of the Drumheller Slough/White Mallard Outfall Project
on Steelhead, Chinook Salmon, Sacramento Splittail,
and Giant Garter Snake

BIOLOGICAL ASSESSMENT: Impacts of the Drumheller Slough/White Mallard Outfall Project on Steelhead, Chinook Salmon, Sacramento Splittail, and Giant Garter Snake

INTRODUCTION

The Drumheller Slough/White Mallard Outfall Project (project) is intended to improve fish passage for anadromous fish by preventing stranding and entrainment of fish in Drumheller Slough and the White Mallard Duck Club. The project will be maintained and operated by Reclamation District No. 1004 (RD 1004), in cooperation with the White Mallard Duck Club.

The Drumheller Slough outfall structure functions as a barrier to prevent anadromous fish species migrating to spawning areas in Upper Butte Creek from straying into Drumheller Slough and becoming stranded. The outfall structure is located at the mouth of Drumheller Slough on the north side of Butte Creek. The facility is an overflow flashboard structure that when boarded up, creates a differential, thereby acting as a barrier to prevent fish from straying into Drumheller Slough. The Drumheller Slough Outfall has repeatedly been washed out during high flows and is, therefore, not suitable for its intended function. The facility must be replaced with a stable structure that will provide a permanent barrier to prevent fish straying into Drumheller Slough.

The White Mallard outfall is an outlet for drainage from the White Mallard Duck Club. The outfall discharges into Drumheller Slough upstream of the Drumheller Slough outfall structure. The normal discharge point from the White Mallard Duck Club is a weir outlet directly into Butte Creek. The outfall is used as an alternative discharge point when upstream migrations are occurring in Butte Creek, in place of the White Mallard weir, which may attract fish from Butte Creek. Since the facility discharges into Drumheller Slough, upstream of the Drumheller Slough outfall barrier, the potential for fish straying into the White Mallard Duck Club is removed. The White Mallard outfall must be rehabilitated to replace the use of the weir outlet to Butte Creek during critical periods. The facility outlet is severely eroded and with continued use will eventually wash out. With minor modifications, the facility outlet can be stabilized to provide a permanent alternative discharge point into Drumheller Slough.

Three fish species or evolutionarily significant units (ESUs) with special status under the federal Endangered Species Act occur in Butte Creek, in the vicinity of the project area: the Central Valley ESU for steelhead (*Oncorhynchus mykiss*) is listed as threatened (March 19, 1998); the spring-run ESU for chinook salmon (*Oncorhynchus tshawytscha*) is listed as threatened (November 15, 1999); and Sacramento splittail (*Pogonichthys macrolepidotus*) is listed as threatened (March 10, 1999).

Additionally, spring-run chinook salmon are listed as threatened under the California Endangered Species Act, and upper Butte Creek has been designated as critical habitat for Central Valley steelhead by the federal government (64 FR 5740; February 5, 1999). The National Marine Fisheries Service (NMFS) has governance over actions that affect anadromous salmonids; the U.S. Fish and Wildlife Service (USFWS) has governance over actions that affect Sacramento splittail. The presence of a fourth special-status fish, winter-run chinook salmon (*Oncorhynchus tshawytscha*), has not been documented in the vicinity of the project area. A petition for listing the Central Valley fall/late fall-run ESU for chinook salmon was withdrawn. It was determined that listing was not warranted at the time; however, it is considered a candidate species.

The project area also lies within the known range of the giant garter snake (*Thamnophis gigas*), a federally and state-listed threatened species (October 20, 1993).

Conclusions

The project would have a beneficial effect on all of the special-status fish species identified above because it will prevent future stranding and entrainment and reduce injuries during migration. The project is unlikely to affect the giant garter snake because suitable habitat is not present in the vicinity of the two outfall sites. Adverse effects on all special-status species from project construction would be avoided if the proposed avoidance and mitigation measures described below are implemented.

CONSTRUCTION AND MITIGATION COMPONENTS FOR THE PROPOSED PROJECT

During repair and rehabilitation of the two outfalls, the contractor will implement preventative actions to avoid and minimize potential adverse effects on aquatic and riparian resources. These actions include no storing of hazardous materials (e.g., petroleum fuels, concrete curing compounds) at the site, refueling and lubricating equipment away from the watercourse, and proper maintenance of equipment to prevent leakage.

To further reduce the likelihood of adverse effects on fish and the giant garter snake from construction activities, construction will be limited to the summer and fall (from July 15 through October 15). Any activity that temporarily blocks flow to any segment of the stream channel will be subject to the specific constraints described in the *Impact Assessment* section. Construction outside the summer low-precipitation period, or in the event of unexpected rainstorms, would require prior approval from DFG, NMFS, and USFWS.

LISTED AND CANDIDATE SPECIES THAT COULD BE AFFECTED BY THE PROJECT

Life History, Occurrence, and Population Trends

As discussed in the last section, three special-status fish species or ESUs and one special-status reptile could occur in the project area: Central Valley steelhead, Central Valley spring-run chinook salmon, Sacramento splittail, and giant garter snake.

Steelhead

Adult steelhead leave the ocean to migrate up coastal streams and inland rivers with high streamflows from early November through early May, although the majority probably enter fresh water from late December through late April. The timing and rate of migration depend on several factors, including stream discharge and water temperatures. Spawning can occur either shortly thereafter or some time later, depending on the sexual maturity of the fish, but probably peaks from January through March. Adult steelhead spawn in shallow redds (nests) constructed in relatively clean, loose gravels, typically at the end of pools and at the head of riffles having appropriate water depths and velocities. Unlike Pacific salmon, which all die after spawning, adult steelhead are capable of returning to the ocean after spawning, typically by June of that same year (Shapovalov and Taft 1954).

Steelhead eggs incubate within the gravel and hatch from about 19 to 80 days at water temperatures ranging from 60EF (16EC) to 40EF (4EC), respectively. The average incubation period is approximately 4 to 6 weeks. After hatching, the young fish (alevins) remain in the gravel for an additional 2 to 6 weeks before emerging from the gravel and taking up residence in the shallow margins of the stream. The juvenile fish feed primarily on aquatic and terrestrial insects for periods ranging from less than 1 year to 4 years. Most juvenile steelhead spend 1 to 3 years in fresh water before emigrating to the ocean as smolts (Shapovalov and Taft 1954). They typically migrate to the ocean as the streamflow declines and the water temperature increases in April, May, and June. Steelhead live in the ocean generally for 1 to 3 years before returning to fresh water to spawn.

In Butte Creek, spawning and rearing habitat for steelhead is located several miles upstream of its confluence with Drumheller Slough. The project area lacks sufficient spawning gravel and has warm summer water temperatures that exceed tolerance levels of juvenile steelhead. The steelhead population in the section of Butte Creek near Drumheller Slough is probably small, but outmigrants have been collected in DFG screw traps both upstream and downstream of this area. Rearing juveniles that may have been steelhead have been collected in Dry Creek, about 22 miles upstream from the project area (Ward pers. comm.).

Chinook Salmon

All chinook salmon require cold freshwater streams with suitable gravel for reproduction. Females deposit their eggs in redds that they excavate in the gravel bottom in areas of relatively swift water. Eggs generally hatch in approximately 6 to 12 weeks, and newly emerged larvae remain in the gravel for another 2 to 4 weeks until the yolk is absorbed (Moyle 1976, Beauchamp *et al.* 1983, Allen and Hassler 1986). For maximum survival of incubating eggs and larvae, water temperatures must be between 41EF (5EC) and 57EF (14EC). After emerging, chinook salmon fry tend to seek shallow, nearshore habitat with slow water velocities and move to progressively deeper, faster water as they grow. Juveniles typically rear in fresh water for up to 5 months before migrating to sea. Chinook salmon spend 2 to 4 years maturing in the ocean before returning to their natal streams to spawn. All adult salmon die after spawning (Moyle 1976, Beauchamp *et al*. 1983, Allen and Hassler 1986, Raleigh *et al*. 1986).

Butte Creek supports one of the largest runs of spring-run chinook salmon in the Central Valley (Campbell and Moyle 1991, Yoshiyama *et al.* 1998). The upstream spawning migrations of adult spring-run chinook salmon in Butte Creek occur from February

through as late as June in some years (Ward pers. comm.). They then hold in the colder, upper reaches of the stream (i.e., several miles upstream of the project area) until spawning in late August through early October. Downstream migration of juveniles occurs from November through June (Ward pers. comm.). Early migrants are usually yearling fish that have reared in-stream over the previous summer, whereas later migrants are young-of-the-year.

Adult fall-run chinook salmon migrate into Butte Creek from September through December and spawn from mid-October through late December. Spawning peaks in late October and November (Ward pers. comm.). Eggs incubate from October through March, and juveniles rear and smolts emigrate from February through June. Although the majority of young fall-run chinook salmon migrate to the ocean during the first few months following emergence, a small number may remain in fresh water and migrate as yearlings. In Butte Creek, spawning and rearing habitat for fall-run chinook salmon is located upstream of the project area. Drumheller Slough, and Butte Creek in the vicinity of the project area, lack sufficient spawning gravel and have elevated summer water temperatures.

Sacramento Splittail

Sacramento splittail are freshwater fish capable of tolerating moderate levels of salinity (10 to 18 parts per thousand [ppt]) (59 FR 862; June 5, 1994). Food includes opossum shrimp, earthworms, clams, insect larvae, and other benthic invertebrates (Moyle *et al.* 1995). They can grow to 40 centimeters (cm) in length and attain 5 to 7 years of age. Both male and female Sacramento splittail become sexually mature by their second winter, when they are about 10 cm in length. Sacramento splittail spawn during late April and May in Suisun Marsh, and from early March through May in the upper Sacramento–San Joaquin River Delta and lower reaches of the Sacramento and San Joaquin Rivers (Moyle *et al.* 1989); however, spawning has been observed as early as January and as late as July. Eggs are adhesive and are deposited over flooded streambanks or aquatic vegetation when water temperatures are 9 to 20°C (Moyle 1976, Wang 1986). Spawning generally occurs in the lower reaches of rivers or large or dead-end sloughs (Moyle *et al.* 1995). Larvae initially rear near spawning sites in shallow, weedy areas. As they grow, they move into deeper water (Wang 1986).

In the Butte Creek drainage, juvenile Sacramento splittail have been collected in Little Butte Creek near the Western Canal, approximately 14 miles upstream of the project area (Ward pers. comm.). Butte Sink, located east of the project area, is potential spawning habitat because it contains extensive areas of flooded vegetation in winter and spring (Ward pers. comm.). Splittail may utilize Drumheller Slough; however, they would have already left the project area by mid-July and would not be expected to return until after mid-October or until flooding occurs in the Butte Creek drainage.

Giant Garter Snake

The giant garter snake inhabits areas that contain permanent or seasonal water (including summer water), mud bottoms, and vegetated embankments. In rice growing areas, giant garter snakes have adapted well to vegetated artificial waterways and the rice fields they supply (Hansen and Brode 1992). The species appears to be absent from most permanent waters that support established populations of predatory "gamefish" and from natural or artificial waterways that undergo routine mechanical or chemical weed control or compaction of bank soils (Hansen and Brode 1992).

Hansen (1993, 1994 personal records) reported the following observations of giant garter snakes in the vicinity of the project area:

1) In ricelands northwest of the intersection of Afton Blvd. and County Road 69, Glenn County, approximately 9 miles northwest of the project area (1994);

2) In ricelands northwest of the intersection of Gridley and Adobe roads, Colusa County, approximately 6 miles northwest of the project area (1993);

3) Along the Colusa Drain near the intersection of Southam and Clark roads, Colusa County, approximately 10 miles northwest of project area on the west side of the Sacramento River (1993); and

4) Near the intersection of Norman and Boggs roads, Colusa County, approximately 11 miles northwest of the project area on the west side of the Sacramento River (1993).

In addition to the observations listed above, giant garter snakes have been observed in several locations in ricelands northeast of the project area as well as in the Gray Lodge Waterfowl Management Area (Hansen pers. comm.). Giant garter snakes are also known from the Sacramento and Delevan National Wildlife Refuges west of the Sacramento River.

No giant garter snakes were observed in the project area during May, 2000 field surveys and no individuals of this species were found during 1997 surveys in the western portion of Drumheller Slough (Hanson Environmental 1997). May, 2000 surveys were conducted at the reconnaissance level only, whereas 1997 surveys were conducted according to USFWS and DFG protocol for giant garter snake surveys. While giant garter snakes may use portions of Drumheller Slough as a travel corridor during the active season between more optimal habitats, several environmental factors are contrary to optimal giant garter snake habitat. These include deep water, high seasonal flows, high flooding frequency, high predator densities, lack of higher elevation areas for overwintering sites, and lack of preferred emergent vegetation.

IMPACT ASSESSMENT

Potential Take from the Project

Proposed avoidance and mitigation measures, combined with project benefits to special-status fish species, will minimize or eliminate adverse project effects during construction. However, construction activities may temporarily impact habitat quality, and potentially contribute to future "take", as defined under Section 3 of the federal Endangered Species Act. "Take" is defined as hunting, harming, harassing, pursuing, shooting, wounding, capturing, killing, trapping, or collecting a protected species, or attempting to perform one of these actions. The USFWS has further defined "harm" in its implementing regulations as any act that kills or injures the species, including significant habitat modification or degradation. Take protections of the federal Endangered Species Act are afforded to formally listed endangered species by both USFWS and NMFS, and to formally listed threatened species by USFWS. Take protections are afforded to threatened species by NMFS if (1) the species is formally listed as threatened *and* (2) protections are specified by a rule issued under Section 4(d). Currently, Central Valley steelhead, Sacramento splittail, and spring-run chinook salmon are formally listed as threatened. Fall/late fall-run chinook salmon are not listed, but are considered a candidate species. Section 4(d) rules have not been issued for the Central Valley steelhead, Sacramento splittail, or spring-run chinook salmon. However, federal agencies must implement reasonable and prudent actions to avoid and minimize take of listed species. Although unlikely, take from the project could result during project construction from habitat degradation and interruption of migration.

Impact Assessment Methods

To complete the impact assessment, information on species life history and on the fisheries resources of Butte Creek was obtained from the literature and DFG personnel. Project impacts on special-status fish species were assessed by evaluating construction impacts on fish habitat, by comparing species and life-stage presence in the project area with the proposed construction schedule, and by comparing pre-project and post-project operation of the two outfalls.

Project Impacts

Effects on Fisheries and Water Quality

Project impacts on fishes are primarily related to the risk of oil or grease discharge from equipment, temporary siltation and turbidity due to construction, dewatered habitat, temporary disturbance of aquatic habitat, and the potential for incidental mortality or injury. Soil erosion and sedimentation in Drumheller Slough could result in temporary degradation of water quality and fish habitat downstream, in Butte Creek. Excessive sediment deposited in or near stream channels can degrade aquatic habitats. Sediments can smother developing eggs, degrade spawning habitat, and decrease food production. Increased turbidity can increase fish mortality, reduce feeding opportunities for fish, and cause fish to avoid biologically important habitat.

Additionally, construction materials such as raw cement, concrete washings and curing compounds, and petroleum products could adversely affect water quality if accidental spills occurred during project construction. Increased pollutant concentrations could limit fish production, abundance, and distribution by reducing egg survival and causing direct mortality of fish or their p

The contractor will avoid or minimize increased sediment input to Drumheller Slough by implementing the follow

- minimize work or equipment operation in flowing water during in-channel activities by constructing cofferdams and diverting all flows around construction sites;
- conduct all construction work according to site-specific construction plans that minimize the potential for sediment input to the aquatic system;
- identify all areas requiring clearing, grading, revegetation, and recontouring and minimizing the areas to be cleared, graded, and recontoured;
- grade spoil sites to minimize surface erosion;
- limit removal of riparian vegetation to fast-growing shrubs, vines, and herbaceous vegetation;
- cover bare areas with mulch and revegetating all cleared areas with native species;
- rewater channel areas dewatered for construction prior to removal of cofferdams; and
- construct sediment catch basins across the river channel immediately below the project area when performing in-channel construction to prevent silt- and sediment-laden water from entering the main flow; accumulated sediments would be periodically removed from the catch basin.

In-channel construction will be limited to the summer low-precipitation period (July 15 through October 15). Impacts on steelhead and splittail will be avoided because these species do not occur in or near the project area during this period. The primary occurrence of spring-run chinook salmon outmigrants and fall-run adults also would be avoided.

Construction personnel will participate in a worker environmental awareness program. Workers will be informed about the sensitive biological resources associated with the project and that illegal disturbance to special-status fish or their habitat (e.g., creek channel and riparian vegetation) is a violation of the federal Endangered Species Act.

The contractor will be required to establish a spill-prevention and countermeasure plan before project construction that includes strict on-site handling rules to keep construction and maintenance materials out of waterways. The plan will include measures to

- prevent raw cement, concrete or concrete washings, concrete curing compounds, oil or other petroleum products, or any
- immediately clean up all spills according to the spill-prevention and countermeasure plan and immediately notify DFG of any spills and cleanup procedures;
- remove vehicles from the normal high-water area of the slough before refueling and lubricating; and
- clean all equipment prior to use and properly maintain it to prevent any leakage of fuel or lubricants.

These protective measures will be included in the application to DFG for a streambed alteration agreement pursuant to Sections 1601–1603 of the California Fish and Game Code prior to the onset of construction.

Effects on Fish Migration

Construction activities will occur between July 15 and October 15 and will consequently avoid the primary migration period for steelhead and chinook salmon. Adult steelhead are not expected to be present in the project area during construction. However, adult fall-run chinook salmon may be present on their way to upstream spawning areas, and yearling spring-run outmigrants may be present if early October storms occur (Ward pers. comm.). Splittail would not be in the area during the proposed construction period.

The new outfall structures will improve upstream passage of adult salmonids and downstream migration of juvenile salmonids as compared to the existing structures, because stranding and entrainment will be eliminated.

Giant Garter Snake

The USFWS conducted a survey and prepared a biological assessment for the giant garter snake as part of the Butte Creek/Sanborn Slough Bifurcation Project (USFWS 1999 *in* Jones & Stokes Associates 1999). No giant garter snakes were found and they stated that the potential for this species to occur was low. The Butte Creek/Sanborn Slough project area is approximately 2.5 miles north of the Drumheller Slough project area; riparian and riverine habitat is similar in both areas. The USFWS also stated that subsequent project impacts on giant garter snakes would be minimal due to the presence of many of the environmental factors that are contrary to optimal giant garter snake habitat parameters. These are the same factors discussed above (see *Life History, Occurrence, and Population Trends*). For these reasons, the proposed project is not expected to impact giant garter snakes.

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not used unless USFWS wants it in

Impacts on Giant Garter Snake

Construction of the outfall in Drumheller Slough could adversely impact individual giant garter snakes that may be present in the project area unless appropriate mitigation measures are taken. RD 1004 will minimize potential impacts to giant garter snakes by implementing the following mitigation measures:

a) Work in the channel will be restricted to the snake's active period, from May 1 through October 1, 200

b) Immediately prior to work in Drumheller Slough (within 24 hours) a qualified biologist will survey the area to ensure that no snakes are present within the construction zone. A biological monitor will be present to ensure that no individuals are harmed during construction activities.

Notice of Completion

State of California
Office of Planning and Research
1400 Tenth Street
Sacramento, California 95814

Drumheller Slough and White Mallard Outfall Project
Project Title

North of confluence of Butte Creek approximately 6 miles east of Sacramento River (T 17N, R 1W unsurveyed section).

Project Location–Specific

8 miles northeast of Colusa | Colusa
Project Location–City | **Project Location–County**

The existing facilities have failed repeatedly. The Drumheller Slough outfall has been washed out during high flows

Description of Nature, Purpose, and Beneficiaries of Project

and must be replaced with a stable structure that will provide a permanent barrier to prevent fish straying into Butte Creek. The White Mallard outfall must be rehabilitated to replace the use of the weir outlet to Butte Creek during critical periods. The proposed project would result in beneficial effects on anadromous fish by preventing fish from straying into Drumheller Slough and the White Mallard Duck Club from Butte Creek, preventing stranding and entrainment.

Reclamation District No. 1004
Lead Agency | **Division**

134 5th Street
Address Where copy of EA/IS is Available

Colusa, California 95932

30 days (July 3 - August 2)
Review Period

Stephen Sullivan, Ensign & Buckley | (916) | 971-3961 |
Contact Person | **Area Code** | **Phone** | **Extension**

United States Department of Interior
Bureau of Reclamation, Mid-Pacific Region
Northern California Area Office
Shasta Lake, California

Draft Finding of No Significant Impact

DRUMHELLER SLOUGH AND WHITE MALLARD OUTFALL PROJECT

Background

The U.S. Bureau of Reclamation (USBR) is the federal Lead Agency proposing the replacement and rehabilitation, respectively, of the Drumheller Slough and White Mallard outfall structures located in Colusa County, just north of the confluence of Drumheller Slough and Butte Creek. The following improvements are proposed:

Drumheller Slough Outfall

- Replacement of the existing flood-damaged structure with a more stable concrete overflow structure that will provide a permanent barrier to prevent fish straying from Butte Creek into Drumheller Slough and the White Mallard Duck Club. The new structure will have openings configured to the channel shape and a low overflow weir to minimize obstructions to winter drainage flows. To allow for closure of the openings and to create the required barrier, the openings will be fitted with stoplog slots. Stoplogs or bulkheads will be manually installed and removed as required.

- Installation of riprap revetment to protect the channel in the area of the facility from erosion. Riprap will extend approximately 10 feet upstream and 20 feet downstream of the structure.

- Construction will be performed between July 1 and October 15.

White Mallard Outfall

- Rehabilitation of the facility outlet including: 1) Replacement of washed out concrete pipe sections; 2) installation of energy dissipator at outlet end of pipe; 3) replacement of eroded embankment section at outlet; and 4) placement of riprap revetment around outlet.

- Construction will be performed between July 15 and September 30, prior to flooding of the White Mallard Duck Club.

Alternatives

Alternatives to the proposed action include : 1) take no action (No-Action Alternative), and 2) rehabilitate and repair existing facilities following a failure. Under the No-Action Alternative, the damaged structures would not be repaired or replaced. The Drumheller Slough outfall would not provide a barrier to prevent migrating adult fish from straying into Drumheller Slough and becoming stranded. The White Mallard outfall would continue to erode and would eventually wash out. The No-Action Alternative was not selected because it would continue to allow stranding of anadromous fish. Also, it would not sells the need to protect, enhance. and restore critical habit and natural resource communities of native, resident, no migratory wildlife species.

The proposed action was selected over Alternative 2 because the continued rehabilitation no repair of existing facilities would not provide the necessarily improvements and would not mitigate any of the potentially adverse environmental impacts associated with failure of these structures. When the structures fail, fish could continue to stray from Butte Creek into Drumheller Slough and the White Mallard Duck Club becoming stranded. Also, repair of the existing facilities without any improvements would result in nearly the same impacts as the proposed project each time the facilities were repaired.

Findings

In accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, the Northern California Office of the Mid-Pacific Region of the U.S. Bureau of Reclamation has determined that the proposed action is not a major Federal action that would significantly affect the quality of the human environment and that an Environmental Impact Statement is not required for implementation of the proposed action.

The Finding of No Significant Impact is based on the following:

1. The action would result in beneficial effects on anadromous fish by preventing fish from straying into Drumheller Slough and the White Mallard Duck Club from Butte Creek thereby reducing stranding and entrainment, reducing fish mortalities from warm water temperatures and poaching, and reducing injuries during migration.

2. The action would result in beneficial impacts on water quality in Drumheller Slough over the long-term, although instream construction activities could result in temporary, short-term effects on water quality in Drumheller Slough (e.g., increases in turbidity and it sedimentation). These temporary impacts are not expected to impact anadromous fish because construction would occur from July 15 through October 15, when few fish are present in the local waterways.

3. The action is not likely to adversely affect federally-listed threatened or endangered species.

4. No cultural resources, Indian Trust Assets, or environmental justice issues are associated with this project.

5. Mitigation measures have been incorporated into the Project to reduce any potentially significant short-term impacts on water quality and anadromous fish during construction. These include the following:

   - Limit in-channel construction to the summer low-precipitation period (July 15 October 15).

   - Materials hazardous to humans, wildlife, and sensitive environments which would be present during project construction would be limited to petroleum precincts and concrete curing compounds. Proper handling of these materials will avoid danger to humans, wildlife, and sensitive environment resources.

   - Vehicles will be removed from the normal high-water area of Drumheller Slough prior to refueling and lubricating. Equipment will be cleaned prior to use and properly maintained to prevent any leakage of fuel or lubricants.

   - Install sandbags, bay bales, silt fencing, or other erosion control and containment measures during construction to prevent silt runoff into surface waters.

   - Stake the limits of the construction footprints in the field. The removal of riparian vegetation will be limited to fast-growing shrubs and vines.

   - Construction personnel will participate in an environmental awareness training program.

   - If buried cultural materials are unearthed during construction, the contractor will halt constriction work near the find until a qualified archeologist can assess its significance.

Approve:_____ Date:_____

Michael J. Ryan
Manager, Northern California Area Office

United States Department of Interior
Bureau of Reclamation, Mid-Pacific Region
Northern California Area Office
Shasta Lake, California

Draft Finding of No Significant Impact

DRUMHELLER SLOUGH AND WHITE MALLARD OUTFALL PROJECT

Background

The U.S. Bureau of Reclamation (USBR) is the federal Lead Agency proposing the replacement and rehabilitation, respectively, of the Drumheller Slough and White Mallard outfall structures located in Colusa County, just north of the confluence of Drumheller Slough and Butte Creek. The following improvements are proposed:

Drumheller Slough Outfall.

- Replacement of the existing flood-damaged structure with a more stable concrete overflow structure that will provide a permanent barrier to prevent fish straying from Butte Creek into Drumheller Slough and the White Mallard Duck Club. The new structure will have openings configured to the channel shape and a low overflow weir to minimize obstructions to winter drainage flows. To allow for closure of the openings and to create the required barrier, the openings will be fitted with stoplog slots. Stoplogs or bulkheads will be manually installed and removed as required.

- Installation of riprap revetment to protect the channel in the area of the facility from erosion. Riprap will extend approximately 10 feet upstream and 20 feet downstream of the structure.

- Construction will be performed between July 15 and October 15.

White Mallard Outfall.

- Rehabilitation of the facility outlet including: 1) Replacement of washed out concrete pipe sections; 2) installation of energy dissipator at outlet end of pipe; 3) replacement of eroded embankment section at outlet; and 4) placement of riprap revetment around outlet.

- Construction will be performed between July 15 and September 30, prior to flooding of the White Mallard Duck Club.

Alternatives

Alternatives to the proposed action include: 1) take no action (No-Action Alternative), and 2) rehabilitate and repair existing facilities following a failure. Under the No-Action Alternative, the damaged structures would not be repaired or replaced. The Drumheller Slough outfall would not provide a barrier to prevent migrating adult fish from straying into Drumheller Slough and becoming stranded. The White Mallard outfall would continue to erode and would eventually wash out. The No-Action Alternative was not selected because it would continue to allow stranding of anadromous fish. Also, it would not satisfy the need to protect, enhance, and restore critical habitat and natural resource communities of native, resident, and migratory wildlife species.

The proposed action was selected over Alternative 2 because the continued rehabilitation and repair of existing facilities would not provide the necessary improvements and would not mitigate any of the potentially adverse environmental impacts associated with failure of these structures. When the structures fail, fish could continue to stray from Butte Creek into Drumheller Slough and the White Mallard Duck Club becoming stranded. Also, repair of the existing facilities without any improvements would result in nearly the same impacts as the proposed project each time the facilities were repaired.

Findings

In accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, the Northern California Office of the Mid-Pacific Region of the U.S. Bureau of Reclamation has determined that the proposed action is not a major Federal action that would significantly affect the quality of the human environment and that an Environmental Impact Statement is not required for implementation of the proposed action.

The Finding of No Significant Impact is based on the following:

1. The action would result in beneficial effects on anadromous fish by preventing fish from straying into Drumheller Slough and the White Mallard Duck Club from Butte Creek, thereby reducing stranding and entrainment, reducing fish mortalities from warm water temperatures and poaching, and reducing injuries during migration.

2. The action would result in beneficial impacts on water quality in Drumheller Slough over the long-term, although instream construction activities could result in temporary, short-term effects on water quality in Drumheller Slough (e.g., increases in turbidity and sedimentation). These temporary impacts are not expected to impact anadromous fish because construction would occur from July 15 through October 15, when few fish are present in the local waterways.

3. The action is not likely to adversely affect federally-listed threatened or endangered species.

4. No cultural resources, Indian Trust Assets, or environmental justice issues are associated with this project.

5. Mitigation measures have been incorporated into the Project to reduce any potentially significant short-term impacts on water quality and anadromous fish during construction. These include the following:

- Limit in-channel construction to the summer low-precipitation period (July 15 -October 15).

- Materials hazardous to humans, wildlife, and sensitive environments which would be present during project construction would be limited to petroleum products and concrete curing compounds. Proper handling of these materials will avoid danger to humans, wildlife, and sensitive environmental resources.

- Vehicles will be removed from the normal high-water area of Drumheller Slough prior to refueling and lubricating. Equipment will be cleaned prior to use and properly maintained to prevent any leakage of fuel or lubricants.

- Install sandbags, hay bales, silt fencing, or other erosion control and containment measures during construction to prevent silt runoff into surface waters.

- Stake the limits of the construction footprints in the field. The removal of riparian vegetation will be limited to fast-growing shrubs and vines.

- Construction personnel will participate in an environmental awareness training program.

- If buried cultural materials are unearthed during construction, the contractor will halt construction work near the find until a qualified archeologist can assess its significance.

Approve: _____ Date: _____
Michael J. Ryan
Manager, Northern California Area Office

Reclamation District No. 1004
Draft Mitigated Negative Declaration

DRUMHELLER SLOUGH AND WHITE MALLARD OUTFALL PROJECT

The following improvements are proposed for the Drumheller Slough and White Mallard Outfall Project (project) located in Colusa County, California, just north of the confluence of Drumheller Slough and Butte Creek.

Drumheller Slough Outfall

- Replacement of the existing flood-damaged structure with a more stable concrete overflow structure that will provide a permanent barrier to prevent fish straying from Butte Creek into Drumheller Slough and the White Mallard Duck Club. The new structure will have openings configured to the channel shape and a low overflow weir to minimize obstructions to winter drainage flows. To allow for closure of the openings and to create the required barrier, the openings will be fitted with stoplog slots. Stoplogs or bulkheads will be manually installed and removed as required.

- Installation of riprap revetment to protect the channel in the area of the facility from erosion. Riprap will extend approximately 10 feet upstream and 20 feet downstream of the structure.

- Construction will be performed between July 15 and October 15.

White Mallard Outfall

- Rehabilitation of the facility outlet including: 1) Replacement of washed out concrete pipe sections; 2) installation of energy dissipator at outlet end of pipe; 3) replacement of eroded embankment section at outlet; and 4) placement of riprap revetment around outlet.

- Construction will be performed between July 15 and September 30, prior to flooding of the White Mallard Duck Club.

DRAFT DETERMINATION

An Initial Study has been prepared for the proposed project. On the basis of this study, it is determined that the appropriate environmental document for the proposed project is a Mitigated Negative Declaration. Mitigation measures have been incorporated as project commitments into the project description to ensure that no adverse effects would occur. The proposed project would not have an adverse effect on the environment for the following reasons:

- The project does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop

below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

- The project does not have the potential to achieve short-term, to the disadvantage of long-term, environmental goals.

- The project does not have impacts that are individually limited, but cumulatively considerable.

- The project does not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly.

BASIS FOR FINDING

Based on the attached Initial Study and Environmental Assessment, potentially significant short-term impacts on water quality and anadromous fish during construction have been identified. The following avoidance measures will be implemented to reduce or eliminate any residual environmental effects:

- Limit in-channel construction to the summer low-precipitation period (July 15 -October 15).

- Materials hazardous to humans, wildlife, and sensitive environments which would be present during project construction would be limited to petroleum products and concrete curing compounds. Proper handling of these materials will avoid danger to humans, wildlife, and sensitive environmental resources.

- Vehicles will be removed from the normal high-water area of Drumheller Slough prior to refueling and lubricating. Equipment will be cleaned prior to use and properly maintained to prevent any leakage of fuel or lubricants.

- Install sandbags, hay bales, silt fencing, or other erosion control and containment measures during construction to prevent silt runoff into surface waters.

- Stake the limits of the construction footprint in the field. The removal of riparian vegetation will be limited to fast-growing shrubs and vines.

- Construction personnel will participate in an environmental awareness training program.

- If buried cultural materials are unearthed during construction, the contractor will halt construction work near the find until a qualified archeologist can assess its significance.

Therefore, the proposed Mitigated Negative Declaration is filed pursuant to Section 15072 of the Guidelines for the Implementation of the California Environmental Quality Act.

All comments or questions should be directed to :

Gary Bailey
Reclamation District No. 1004
134 5th Street
Colusa, CA 95932

_____ _____

Gary Bailey Date
Reclamation District No. 1004